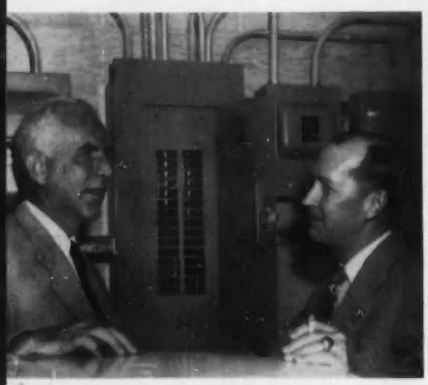
ELECTRICAL WEST

March 1954
25 Cents

SPOKESMAN FOR THE MOST HIGHLY ELECTRIFIED REGION OF THE U.S.

Weather Is Our Business..... 63



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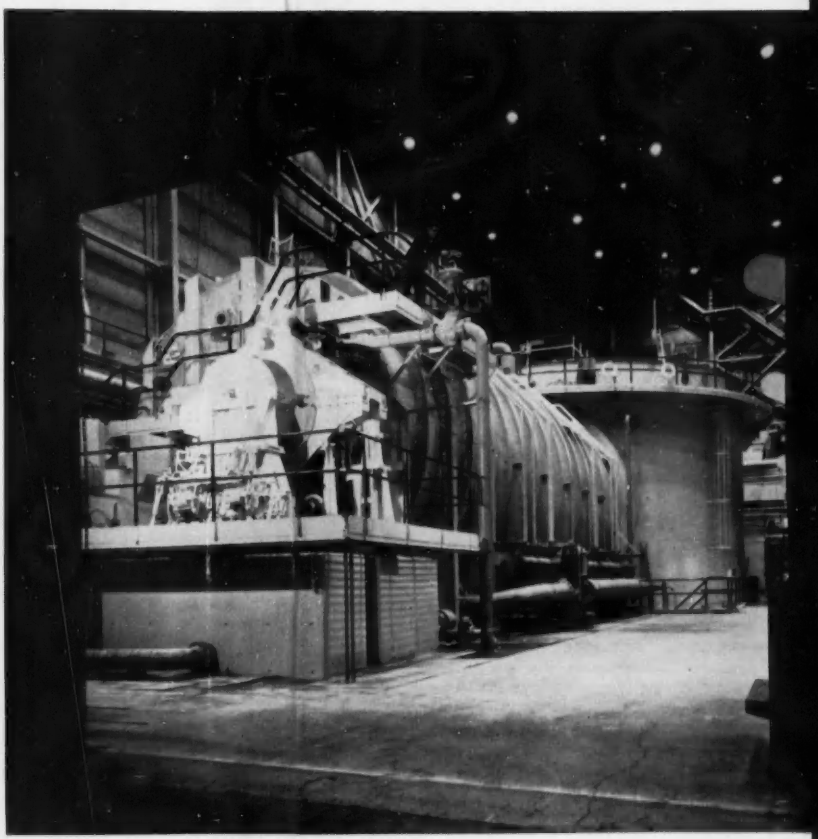

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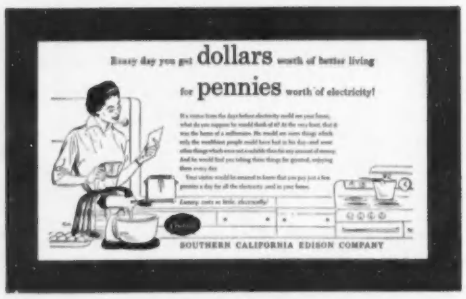
Talking dollars...and s

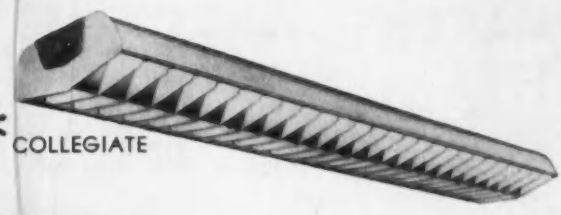
One word we have always had a particular fondness for is "worth." It's a good selling word; customers seem to like it, whether they are in the market for shoes, ships, service—or electrical appliances!

It is a fact that good value in electric service is an essential ingredient in the successful selling of electrical appliances. So appliance dealers should be every bit as interested as customers in advertisements like these which point up the fact that electric service is your biggest money's worth in modern living!

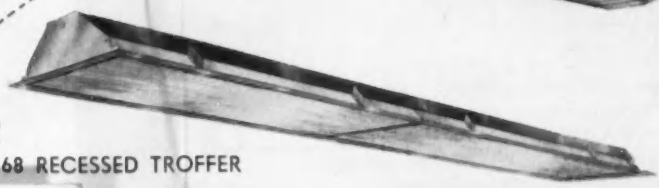
WA
PAG



SOUTHERN CALIFORNIA EDISON COMPANY



COLLEGIATE



168 RECESSED TROFFER

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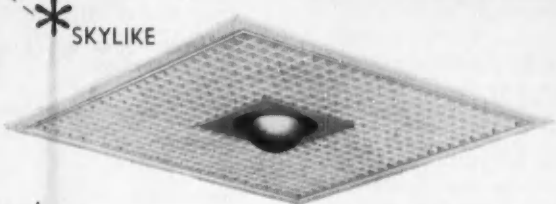
HTING MAKES BUYING EASIER



SKYLIKE

is
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Smoot-
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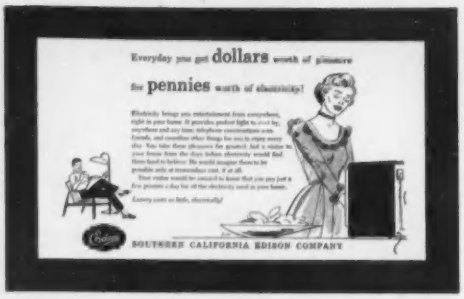
contemporary stylings, simplified maintenance features and dependability. Use them for supermarkets, drug, department and furniture stores—for any commercial establishment.

ORB

SMOOT-HOLMAN

SALES OFFICES IN MOST PRINCIPAL CITIES

BRANCH OFFICE AND WAREHOUSE SAN FRANCISCO



Talking dollars...and sense!

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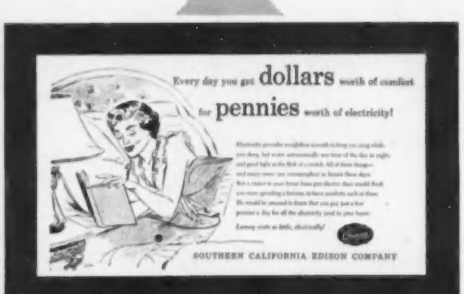
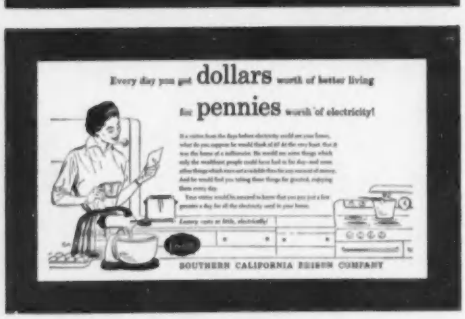
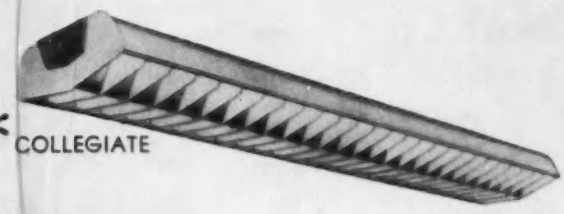




SOUTHERN CALIFORNIA EDISON COMPANY



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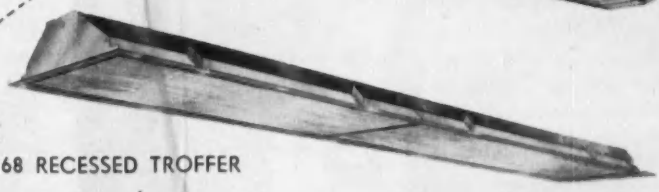
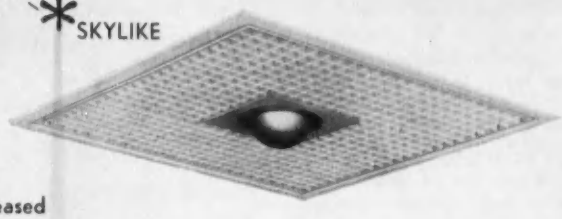


*168 RECESSED TROFFER

*SKYLIKE



DRAMATIZES MERCHANDISE BUILDS SALES!

Finer Smoot-Holman lighting gives brighter, visual sales appeal. Shopping is easy and lighting costs are paid with increased sales. Quality-engineered for 39 years, Smoot-Holman luminaires continue to offer smartest contemporary stylings, simplified maintenance features and dependability. Use them for supermarkets, drug, department and furniture stores—for any commercial establishment.

*ORB

SMOOT-HOLMAN

SALES OFFICES IN MOST PRINCIPAL CITIES

BRANCH OFFICE AND WAREHOUSE SAN FRANCISCO

MARCH
1954

SPOKESMAN FOR MOST HIGHLY ELECTRIFIED REGION OF THE U. S.
The all-industry magazine of progress, established 1887, and incorporating the "Electrical Journal," "Journal of Electricity, Power and Gas" and "Journal of Electricity." Contents copyright. Sixty-sixth year of publication

VOL. 112
NO. 3

ELECTRICAL WEST

George C. Tenney, Editor
W. A. Cyr, Associate Editor
Peggy Boyer, Associate Editor
Walter C. Heston, Engineering Editor
John Coetz, Typography

Next Month

The directory issue hereafter will be published in October instead of April. The industrial issue is being changed from October to April. Accordingly, we have another industrial issue coming up.

An important feature of this number will be an article on southern California's smog problem. The problem will be defined and smog will be broken down into the important contributing causes. Remedial measures will be discussed and progress reported. The question "What is the electrical industry doing, or what can it do, to help mitigate the problem?" will be answered.

How Douglas Aircraft has solved the in-feeding problem for its 8,500 workers with battery-operated food trains is a story of special interest.

There will be articles on the new Rome rigid conduit plant and Revere Copper & Brass Co.'s plant in Los Angeles.

A number of shorter articles will describe industrial applications throughout the West. New methods in industrial wiring systems will be discussed by a consulting engineer.

The power supply problem in the West will be reviewed.

News letter, sales letter and other regular features —of course.

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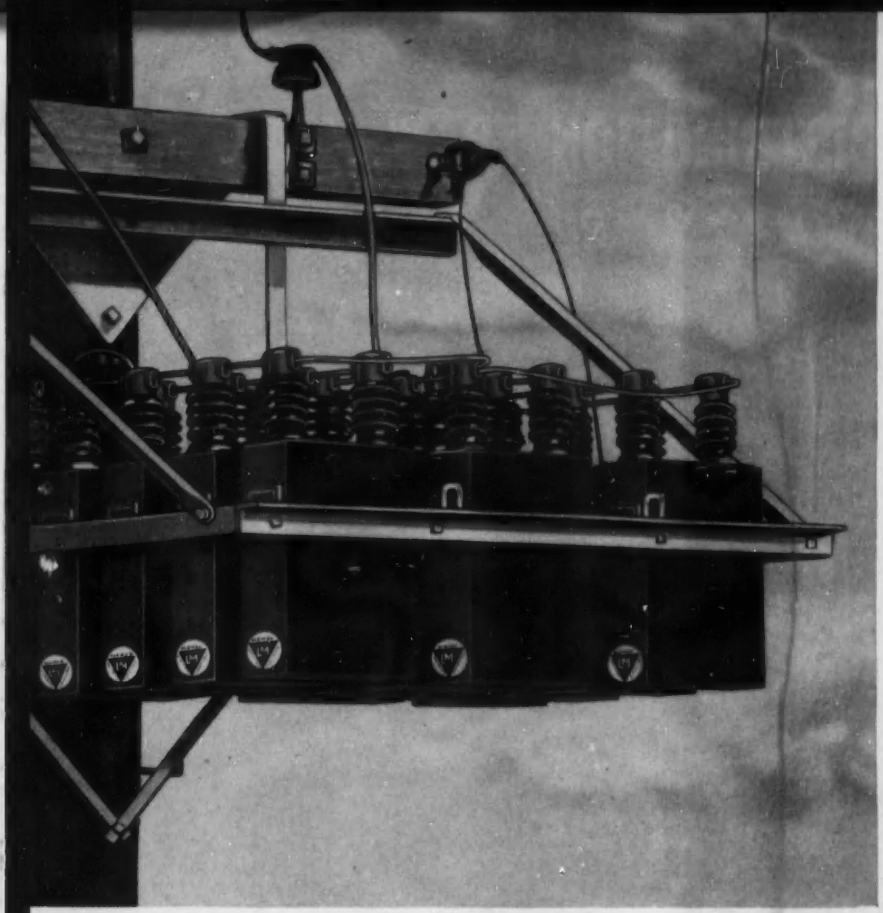


A 300 kvar switched capacitor rack installation. Wiring is completely neoprene-jacketed and bird-proof. Racks are available with or without the three L-M Kyle Type NR Oil Switches.

You Save 3 Ways With ELEMEX CAPACITORS

by **DANIEL J. J. PIRHOFER**, Sales Application Engineer, Capacitor Division, Line Material Company

Since utility systems install power factor correction equipment for its economic benefits, you might as well make the saving involved as great as possible. L-M's ELEMEX Capacitors offer 3 special savings:

1 You save on installation costs with completely assembled and factory-wired racks.

2 You save on over-all life cost because quality design and rigid quality control result in capacitors with an exceptional service record. Failure rate is less than one-half the national average.

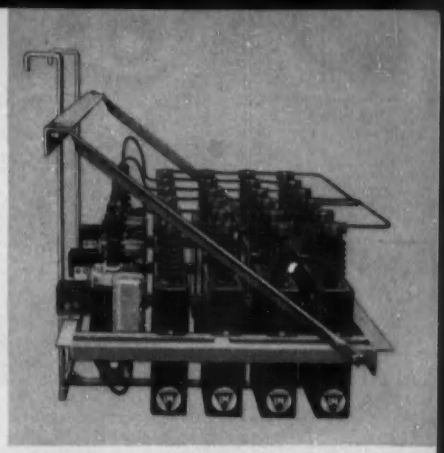
3 You save on automatic switching with L-M's simple, rugged, economical Voltage Control.

Racks and their features are illustrated above. May we give you details of the exclusive process that gives ELEMEX Capacitors such long life, and of the L-M Voltage Control? Ask the L-M Field Engineer for a copy of Bulletin PC-1—and, if you like, a copy of "ABC's of Capacitors." Or, write me at Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).

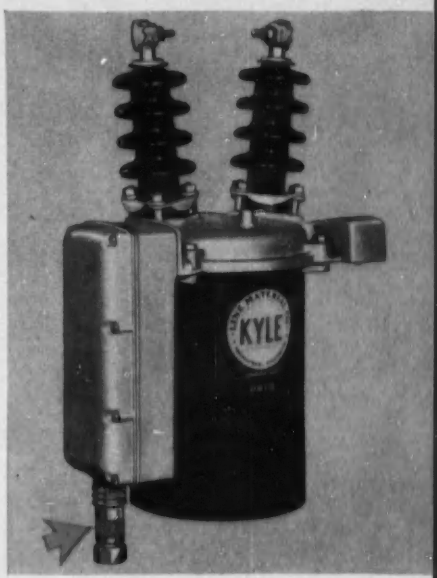
148-1R

LINE MATERIAL

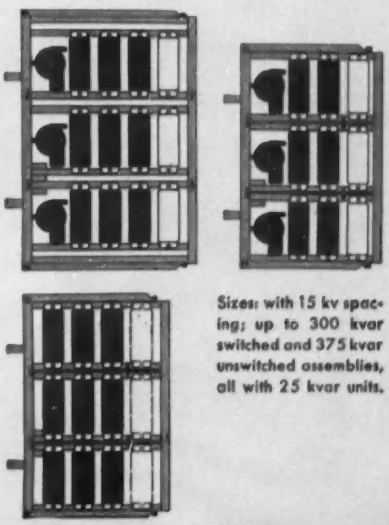
LM Elemex Capacitors



Stress on the pole is no problem—less than one transformer and one secondary drop. Capacitors are mounted vertically—which provides compactness and longer capacitor life.



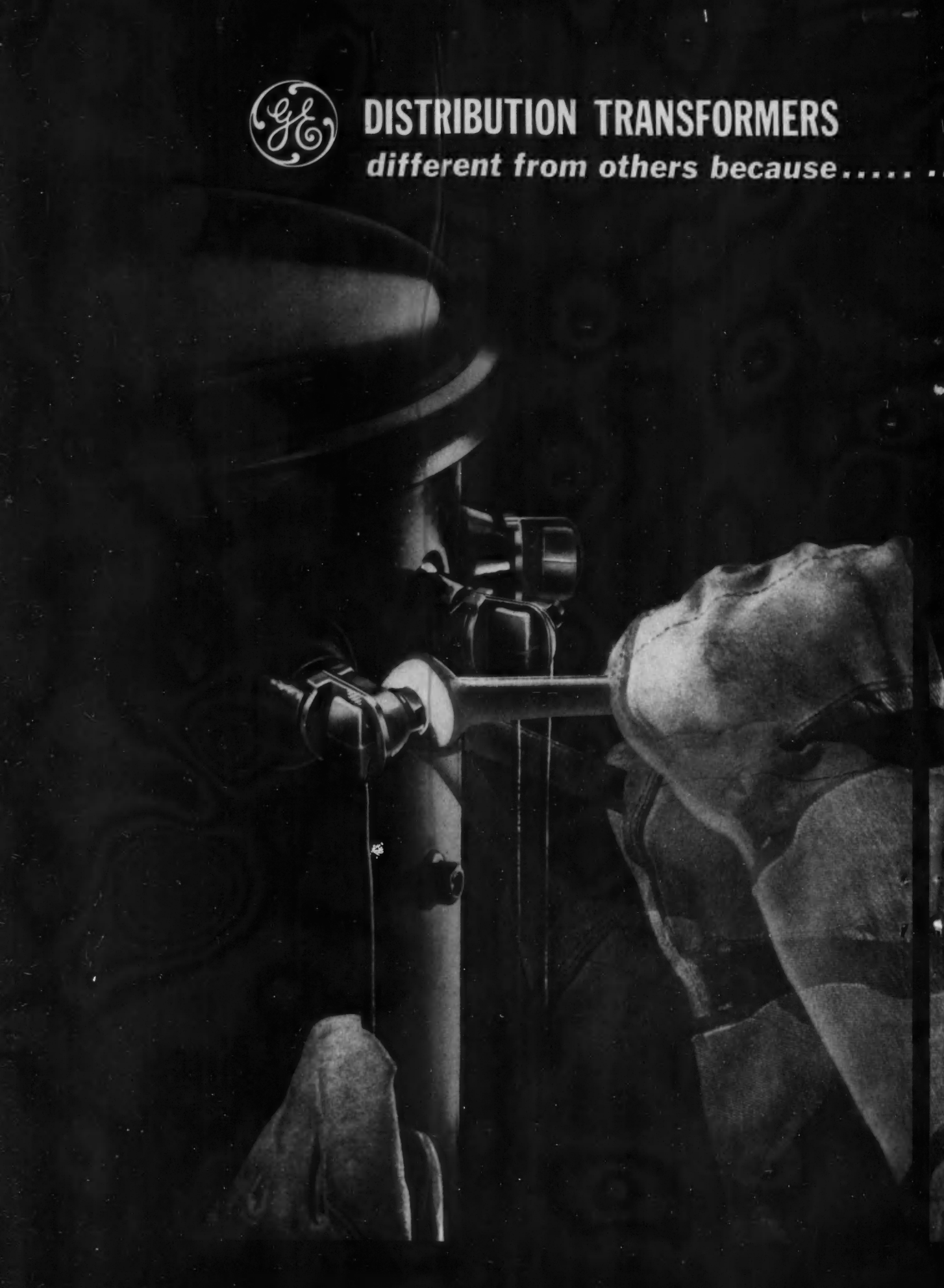
L-M Kyle Type NR Oil Switch. Only low-cost switch with 200 ampere thermal rating and full 150 ampere nominal capacitive rating at 15 kv. Weatherproof plug-in connection at the base of each oil switch control housing. This makes it easy to connect or disconnect the switch without disturbing any of the wiring. Only one easy-to-reach connection on each switch.



Sizes: with 15 kv spacing; up to 300 kvar switched and 375 kvar unswitched assemblies, all with 25 kvar units.

DISTRIBUTION TRANSFORMERS

different from others because.....



....Strenicor pressure terminal clamps.....

minimize breakage due to stress-corrosion

Months or even years after installation, the strain imposed by tight connections may cause breakage of secondary terminals due to stress-corrosion (season cracking). This causes outages, service calls and customer inconvenience.

METALLURGICAL STUDIES of the causes of stress-corrosion led to the development of Strenicor—a new copper-nickel-silicon alloy. After successive solution and aging heat treatments, this alloy provides a high tensile strength of 107,000 psi—a yield strength of 83,000 psi. Thus General Electric Spirakore* transformers with Strenicor secondary terminals are practically immune to failure by stress-corrosion.

REMEMBER . . . all transformers are not alike . . . compare the General Electric plus features in the chart below and see for yourself.

For more information on distribution transformers, either unit-type or conventional, contact your nearest G-E sales office, agent or distributor, or write to General Electric Company, Section 431-7, Schenectady 5, New York.

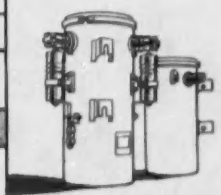
**Registered Trade-mark of General Electric Co.*

You can put your confidence in—

GENERAL ELECTRIC

ALL TRANSFORMERS ARE NOT ALIKE
(make this simple comparison and see)

FEATURE	General Electric	Mfr. A	Mfr. B	Mfr. C	Mfr. D	Mfr. E
Production-line impulse testing	YES	NO	NO	NO	NO	NO
Nitrile rubber gaskets at all tank openings	YES	NO	NO	NO	NO	NO
Strenicor pressure terminal clamps	YES	NO	NO	NO	NO	NO
Insulated clamp-type connectors on tank wall hv bushings	YES	YES	YES	NO	YES	YES
One-piece cover band	YES	NO	NO	NO	NO	YES
Terminals designed for both copper and aluminum conductors	YES	NO	NO	NO	NO	NO
Gapped valve-type arresters	YES	NO	NO	NO	NO	NO
Nationwide company-operated service facilities	YES	YES	NO	NO	NO	YES



UNIT-TYPE CONVENTIONAL

"Take your choice G. E. makes both"

How to Win Friends and Save Money

The fewer your customers' service interruptions, the fewer your trouble calls. The fewer trouble calls, the better your public relations. Self-supporting aerial cables are one of your public relations best friends.

They give you more circuits per pole, and less maintenance. You can install them on existing pole lines and thus lower your installation costs. For your customers, they mean greater safety, more attractive appearance, and fewer service interruptions. Best of all, they let you save money. Lots of it.

Simplex Self-Supporting Aerial Cables have a tough neoprene jacket that withstands abrasion from swaying tree limbs and chafing against poles. They provide effective protection against fungus, heat, sunlight, and weathering.

If you want to know more about what's in it for you and for your customers, write to the address below for Catalog 1006, or ask your Simplex representative for a copy of the Simplex Aerial Cable Catalog.

Simplex WIRES & CABLES

SIMPLEX WIRE & CABLE COMPANY

79 Sidney St., Cambridge 39, Massachusetts

B-M Fittings

THE ORIGINAL INDENTER TYPE E.M.T. COUPLINGS AND CONNECTORS

Briegel, the Original Indenter Fittings are neater in appearance, easier and faster to use. Installation is simple and less expensive. Two quick squeezes sets them forever. Try B-M Indenter Fittings and get more profits from each job.

All B-M Indenter Fittings are U. L. approved as Concrete-tight and for General Use. (File Card E 10863)

BRIEGEL METHOD TOOL CO.
GALVA, • ILLINOIS

Warehouse Stocks in Principal Cities for Immediate Delivery!

DUNCAN TYPE MH Polyphase Meters

A Polyphase Meter for Every Type of Service

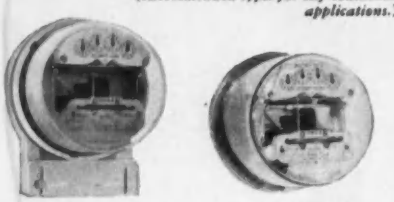
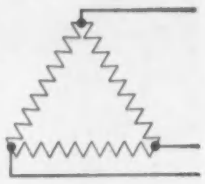
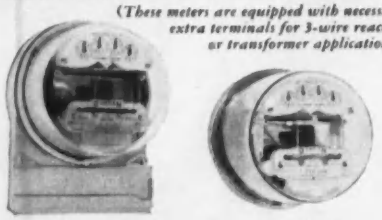
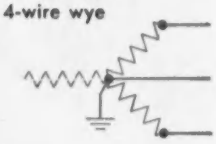
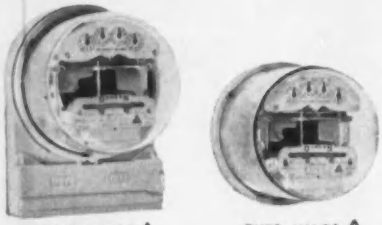
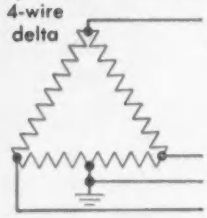
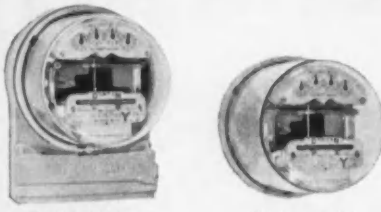
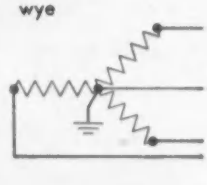
✓ ACCURACY ON HIGH OVERLOADS*

✓ SIMPLICITY

✓ GOOD PERFORMANCE

. . . as required for modern Polyphase Metering

*All meters to 400% of nameplate rating, except 50 ampere bottom connected meters which go to 300%, or 150 amperes, due to the limitation of terminal block dimensions. The 50 ampere socket type meters may be used to meter continuous loads to 200 amperes in Duncan Type HD Mounting Device.

TYPE MH METERS	SERVICE
(Recommended types for self-contained applications.)  TYPE MH-2A TYPE MH-2S	3-phase, 3-wire 
(These meters are equipped with necessary extra terminals for 3-wire reactive or transformer applications)  TYPE MH-2P TYPE MH-2SP	3-wire from 4-wire wye 
 TYPE MH-2P△ TYPE MH-2S△	3-phase, 4-wire delta 
 TYPE MH-2½P TYPE MH-2½S	3-phase, 4-wire wye 

Write for New Bulletin 179

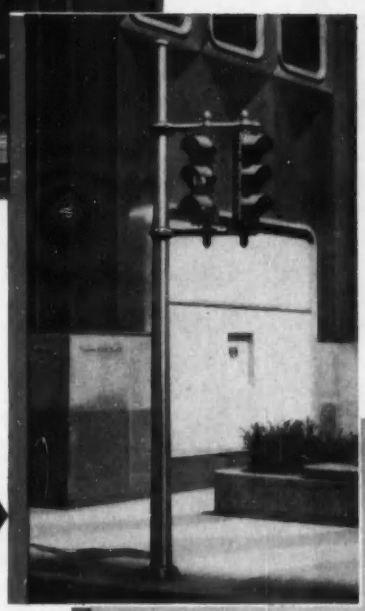
DUNCAN WATTHOUR METERS

DUNCAN ELECTRIC MFG. CO.
LAFAYETTE INDIANA

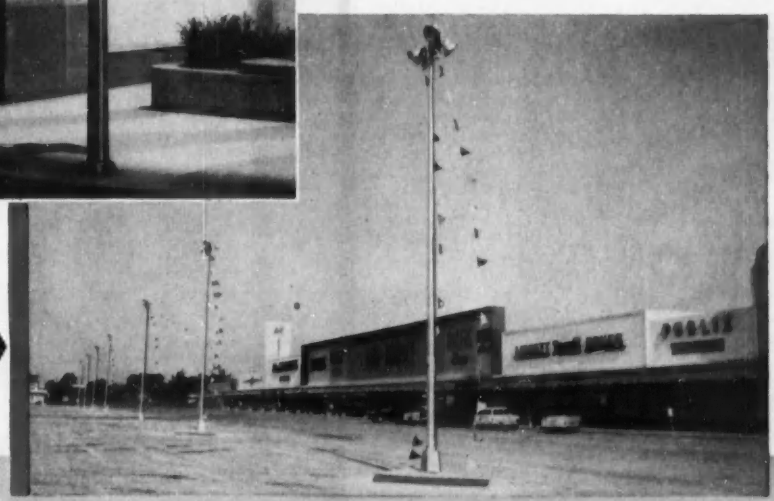
HAPCO Aluminum Alloy Standards

for Street Lights Traffic Lights Flood Lights

A New England city chooses this Hapco Standard and Bracket with special features including a festoon outlet used as a plug for a photo-electric cell.



A Hapco Aluminum Alloy Standard with traffic lights harmonizes with the world's first building with all-aluminum exterior walls.



A parade of Hapco Standards with floodlights illuminates a new shopping center in the sub-tropical South.

The urge for civic beauty is dotting the map everywhere with attractive Hapco Aluminum Alloy Standards and Street Lighting Brackets.

Hapco Aluminum Alloy Standards retain their original lustrous beauty, untarnished by atmospheric conditions. Long life with a complete lack of maintenance requirements guarantees a minimum overall cost. Hapco gracefully tapered standards have equal wall thickness and uniform strength throughout. Their high visibility helps to reduce accidents. Their light weight — about one-third that of steel — makes them easy to handle, easy to erect. Available in seamless lengths up to 40 feet—adaptable to any type of internal or external circuits.

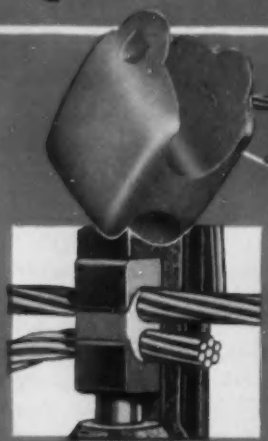
HUBBARD ALUMINUM PRODUCTS COMPANY

MANUFACTURERS OF HAPCO QUALITY ALUMINUM PRODUCTS

A Division of HUBBARD and COMPANY

6301 Butler Street • Pittsburgh 1, Pa.

Tap the Line in Half the Time



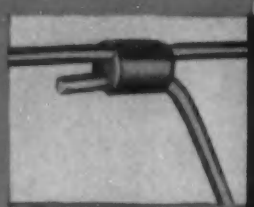
SEPARATE, FULL-CIRCUMFERENCE GRIP FOR EACH CABLE.

Only...

1 tool

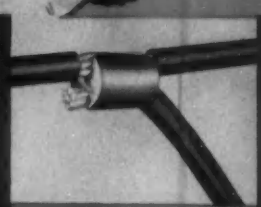
1 connector

1 operation



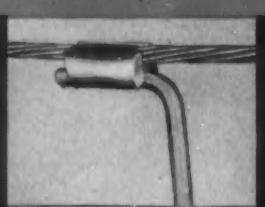
COPPER SQUEEZON

One operation of the Squeezon compression tool permanently bonds this type of joint.



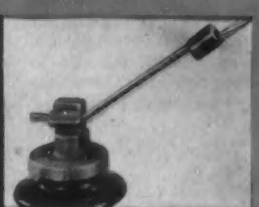
ALUMINUM SQUEEZON

Aluminum connector for aluminum conductor provides large area contact—prevents cold flow, for aluminum to copper or copper to aluminum. No special connector necessary.



FOR T CONNECTIONS

Costly special connectors are eliminated by the use of Kearney Squeezon, for aluminum-to-copper connection.



TAP ON

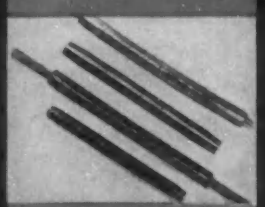
Squeezon's weld-grip, high pressure bonding makes perfect aluminum-to-copper terminations.

DEAD-ENDS

One crimp per Squeezon saves time when multiple connectors are used.

STIRRUP TAP

Two Squeezons and a short piece of wire make an inexpensive, easy-to-install stirrup, insures a rigid, arc and corrosion-proof connection on hot lines.



LINE SPLICE

Line splices are better electrically and mechanically with Squeezon sleeves.

The Squeezon Tool with controlled hydraulic pressure cold welds the connector to the conductor — tool hangs easily to conductor fully supporting its weight.

Specify **KEARNEY**

SQUEEZON

"ONE-CRIMP" CONNECTORS

THE FAST, LOW-COST WAY TO MAKE OVERHEAD CONNECTIONS

One crimp...and you've got the connection!

That's all it takes when you make a line joint with a Squeezon and a Squeezon compression tool. You get a *better* connection . . . a perfect bonded, permanent joint. That's because Squeezon connectors provide *separate*, full-circumference grip on each cable, eliminates galvanic corrosion on transfer surfaces.

Squeezon economy and all-around utility will please you. Your line crews can handle any job in half the time and at a fraction of the cost of conventional methods. One Squeezon tool and two types of connectors . . . the aluminum and the solid copper . . . meet all line requirements.

QUICK-SERVE BIN BOX *(Patented)*
Squeezons are easily accessible in these handy boxes.

MAYDWELL & HARTZELL, *INCORPORATED*
WEST COAST DISTRIBUTORS
Los Angeles • San Francisco • Portland • Seattle • Spokane • Phoenix

JAMES R. KEARNEY CORPORATION
ST. LOUIS, MO.
GUELPH, ONT.
251-W

Products

For Better Construction— For Safer Maintenance

ELECTRICAL INSULATION IS OUR SPECIALTY

Q. *What ONE wire and cable producer grows its own natural rubber, and makes its own synthetic rubber?*

A. UNITED STATES RUBBER COMPANY.

Q. *What ONE wire and cable producer makes plastics?*

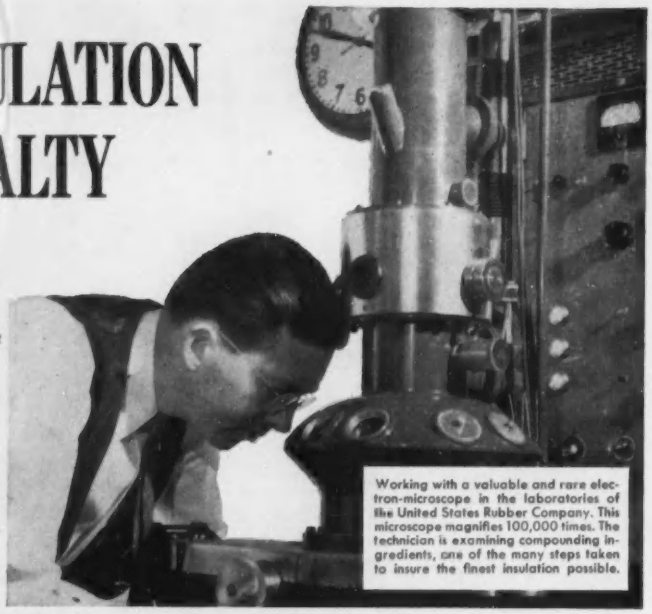
A. "U. S."

Q. *What is the most important part of wire and cable?*

A. The insulation.

Q. *Who is best equipped to make wire and cable with superior insulation?*

A. U. S. RUBBER—which grows its own natural rubber, makes its own synthetic rubber, manufactures its own plastics.



Working with a valuable and rare electron-microscope in the laboratories of the United States Rubber Company. This microscope magnifies 100,000 times. The technician is examining compounding ingredients, one of the many steps taken to insure the finest insulation possible.

Isn't it logical that a rubber company should make the best wire and cable insulation there is? U. S. Rubber has been a pioneer in insulation for over 70 years—has amassed in that time a stockpile of research data and experience that can't be beat. Electrical insulation is a "U. S." specialty!

Electrical insulation makes the difference between superior and ordinary wire and cable. Conductors of all manufacturers are standard, but insulation must be the best that science can produce. That's why your best bet in wire and cable is U. S. Rubber.

SOME MORE OF THE MANY DIFFERENT VARIETIES OF "U. S." WIRE AND CABLE

UTILITIES: Power Cables • Street Lighting • Royal Cords • Network Cables • Utility Control • Pole & Bracket Cable • Service Entrance • Weatherproof • Zip Cord Pole Fixture Cable • Sup. Control

RAILROADS: Power Cables • Communications • Railway Signal • Royal Cords • Welding Cable • Railway Utility • Sup. Control • Weatherproof

HEAVY INDUSTRY: Power Cable • Royal Cords • Welding Cables • Control Cables • Machine Tool Wire • Building Wire • Switchboard Wire • Thermostat Cable • Bus Drop Cable

ONE OF MANY SUPERIOR "U. S." WIRE AND CABLE PRODUCTS

USKORONA-NEOPRENE POWER CABLES

Ozone-resistant for high-voltage applications in wet or dry locations.

These cables are for use on power distribution, street lighting and station control circuits and for general-purpose wiring on circuits up to 8000 volts between phases and at conductor temperatures up to 75 C. They will not crack after 3 hours in air containing .015 per cent ozone. They are light in weight, easy to install and join, and are resistant to oil, heat, sunlight, flame, acids, alkalis and corrosive chemicals. Uskorona-Neoprene cable also eliminates electrolysis. The following are guaranteed test values:

PHYSICAL AND AGING PROPERTIES (MINIMUM VALUES)

	Uskorona			Neoprene Jacket	
	Unaged	After 96 Hrs. O.B.	After 7 Day Geer Oven	Unaged	After 96 Hrs. O.B.
Tensile Lbs./Sq. In.	500	450	450	1800	1600
Elongation Per Cent	250	200	200	300	250

MOISTURE RESISTANCE (MAXIMUM VALUES)

Dielectric Constant and Power Factor of the insulation after immersion in water at 50 C.: Dielectric Constant, one day is 4.5; per cent gain, 1 to 14 days is 5.0; per cent gain, 7 to 14 days is 2.0; Power Factor, per cent, one day is 3.0; Stability Factor 40-80 volts/mil two weeks, per cent is .5.

U.S.RUBBER
SERVING THROUGH SCIENCE

UNITED STATES RUBBER COMPANY

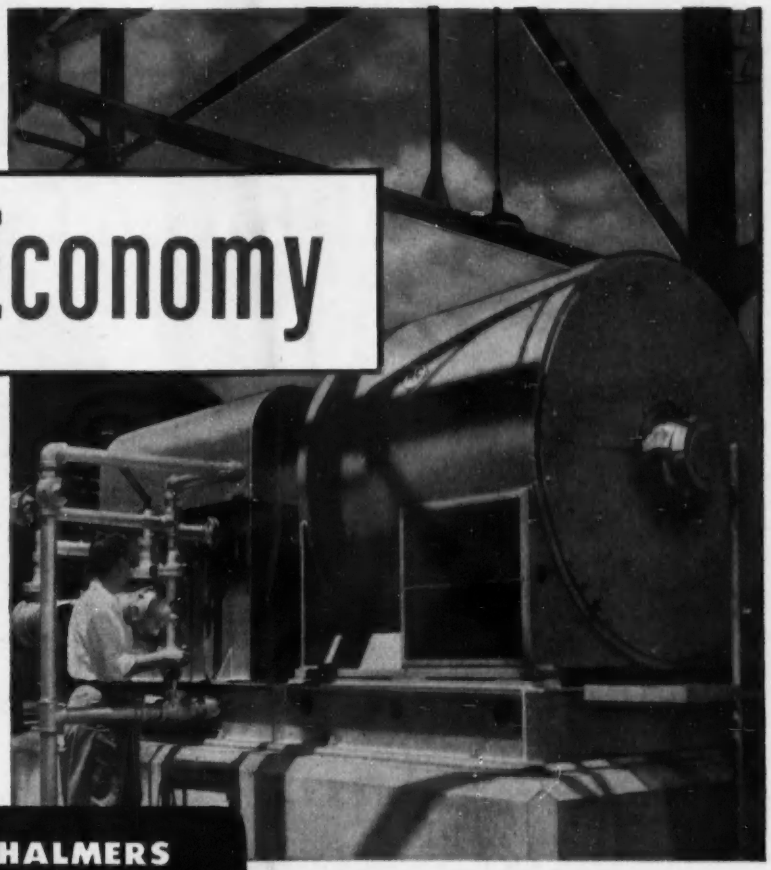
ELECTRICAL WIRE & CABLE DEPT. • ROCKEFELLER CENTER, NEW YORK 20, N. Y.

3-Way Economy

OPEN SKY is all the roof they need

MAINTENANCE is cut to the minimum

RELIABILITY assures maximum availability



ALLIS-CHALMERS
TEFC MOTORS

Induced-draft fan motor for A-C turbine-generator equipped installation at Georgia Power's Plant McManus is rated 900 hp, 2300 volts, 705 rpm.

WITH Allis-Chalmers *tube-type* totally-enclosed fan-cooled motors, you can cut auxiliary drive costs three ways. The opportunity for low installation cost through outdoor applications is only the beginning. Low maintenance and peak reliability both pay worth-while dividends throughout the long life of these motors.

These savings can be yours because the *tube-type* air-to-air heat exchanger design of Allis-Chalmers TEFC motors offers these advantages:

Complete enclosure protects stator core and other electrical parts from dirt and corrosion — indoors or out — under the most severe ambient conditions.

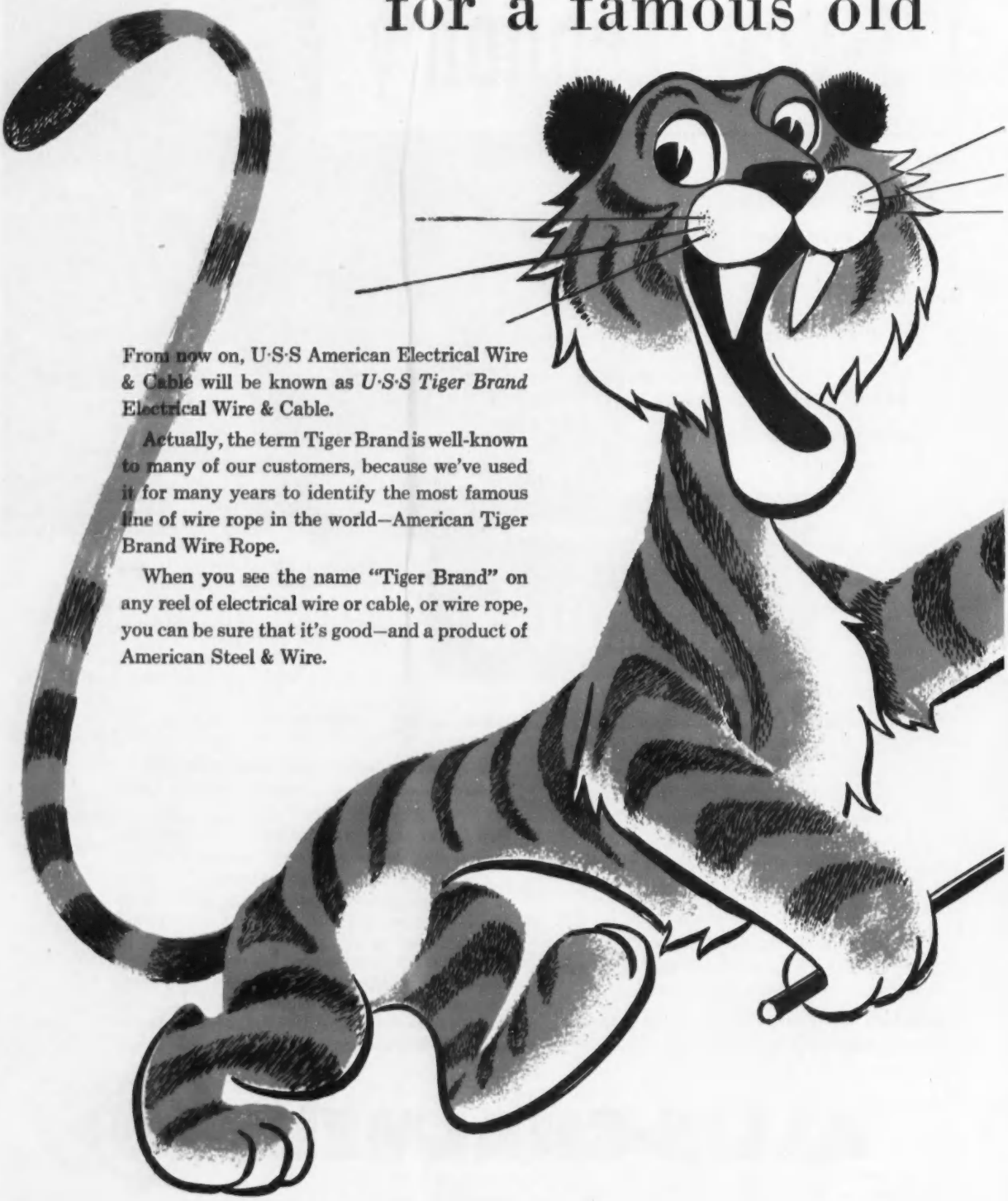
Self-cleaning action results from generous flow of outside air through smooth, straight, heat-exchanger cooling tubes.

Full internal air circulation provides efficient, even cooling for long, trouble-free insulation life . . . and makes large ratings practical.

Available in sizes from 40 hp at 600 rpm to the largest required for power plant auxiliaries, this motor design has been proved in operation by hundreds of installations since 1946. For more information ask your A-C representative for Bulletins 51B7149 and 05B7150, or write to Allis-Chalmers, Milwaukee 1, Wisconsin. A-4258

ALLIS-CHALMERS

a brand new name for a famous old



From now on, U·S·S American Electrical Wire & Cable will be known as *U·S·S Tiger Brand* Electrical Wire & Cable.

Actually, the term Tiger Brand is well-known to many of our customers, because we've used it for many years to identify the most famous line of wire rope in the world—American Tiger Brand Wire Rope.

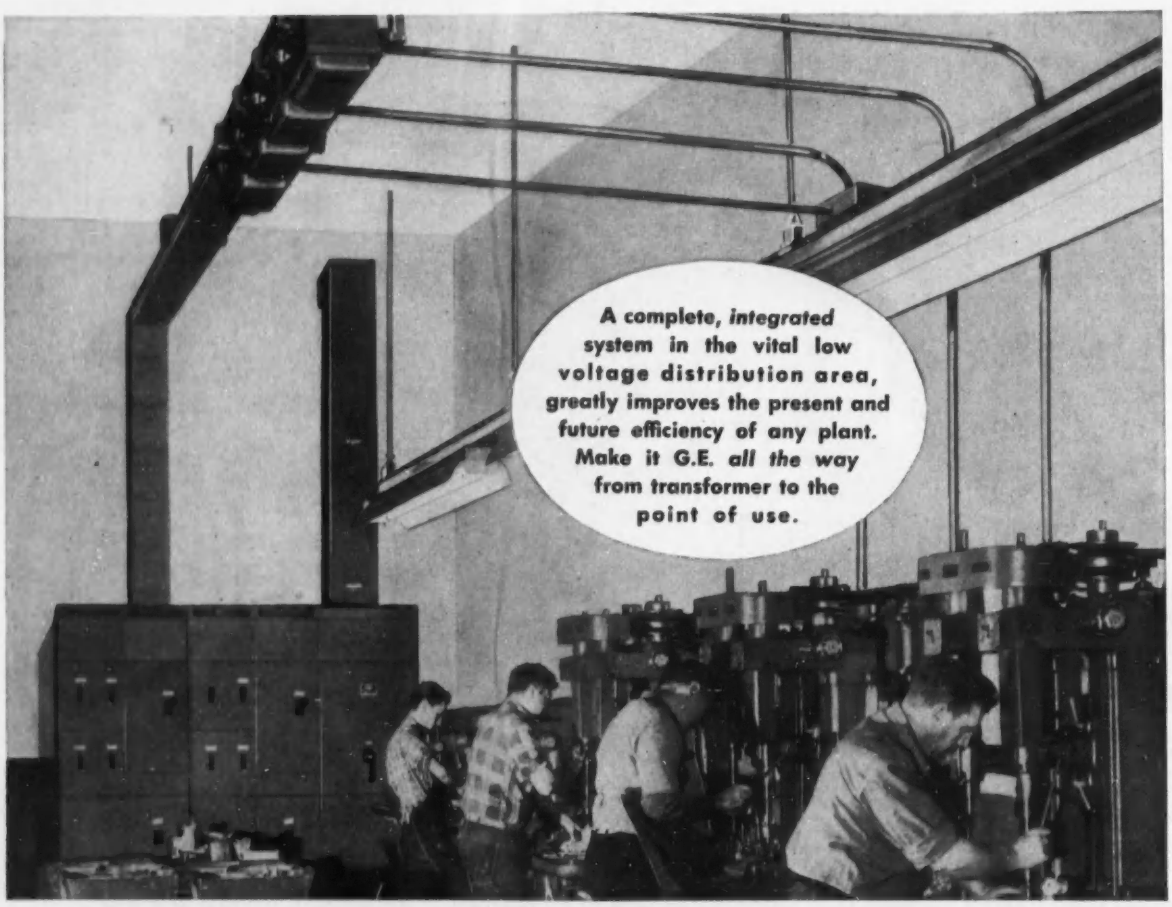
When you see the name "Tiger Brand" on any reel of electrical wire or cable, or wire rope, you can be sure that it's good—and a product of American Steel & Wire.

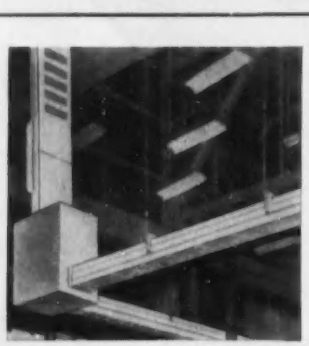
line of wire and cable

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION
GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

UNITED STATES STEEL

To have a flexible plant you must have flexibility here


A complete, *integrated* system in the vital low voltage distribution area, greatly improves the present and future efficiency of any plant. Make it G.E. *all the way* from transformer to the point of use.



Type LVD Flex-A-Power feeder busway connecting with type FVK Flex-A-Power take-off which provides power outlets at one foot intervals. Both available with either copper or aluminum bus bars.

TO PROVIDE for progress you must be free to shift machinery, equipment, perhaps whole departments freely. In many otherwise modern plants this is impossible because of inadequate power supply where it is needed.

General Electric Flex-A-Power busway systems provide complete flexibility of power and lighting arrangements, as well as mobility for portable power tools—in existing buildings or new structures.

General Electric Motor Control Centers, designed for you, offer completely versatile, accessible, easily serviced centralized control of a-c motors up to 200 hp.

General Electric Panelboards complete the distribution and protection system. Assure uniformly high standards by specifying General Electric throughout the all-important load center-to-load area. For more information write General Electric Company, Distribution Assemblies Department, 41 Woodford Ave., Plainville, Conn.

GENERAL ELECTRIC

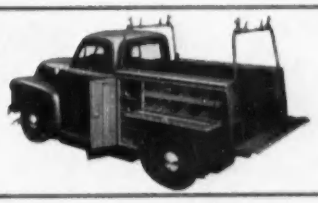
POWERS American SERVICE BODIES AND EQUIPMENT

The 1 Source
for utility bodies and equipment!

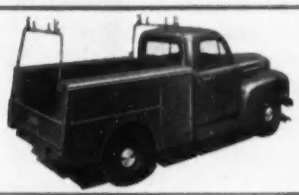
If your work calls for one service body or a hundred . . . if you can use standardized units or require custom-made equipment . . . you'll find a body to fit your needs in the Powers-American line. Ladders, reels, racks, hooks, brackets, shelves, and other special items of equipment, can be furnished for your particular work requirements.

May we help you with your service body problems? Complete details will be sent upon request.

Series 44L and Series 44 (shown above) designed for any general service work. Fully-equipped with shelves and bins. For ½, ¾, 1, and 1½ ton chassis.



Series 25T and 35T arranged for telephone installation and service. Widely used in other phases of utility work. Available in ½ and ¾ ton sizes.



Series 25M and 35M used for all types of general service. Especially suitable for electric meter installation and maintenance. Models for ½ ton and ¾ ton vehicles.

Series 25G and 35G designed for use in the installation and servicing of gas meters. Equipped with meter hold-downs, bins, and pipe rack. In ½ and ¾ ton sizes.

POWERS-AMERICAN DIVISION

McCABE-POWERS AUTO BODY COMPANY

5900 NO. BROADWAY • ST. LOUIS 15, MO.
428 LATHAM SQ. BLDG. • OAKLAND 12, CALIF.

Available in Western States from the following

PACIFIC BODY BUILDERS, Inc.
1812 N. E. Grand Ave.
PORTAND, OREGON

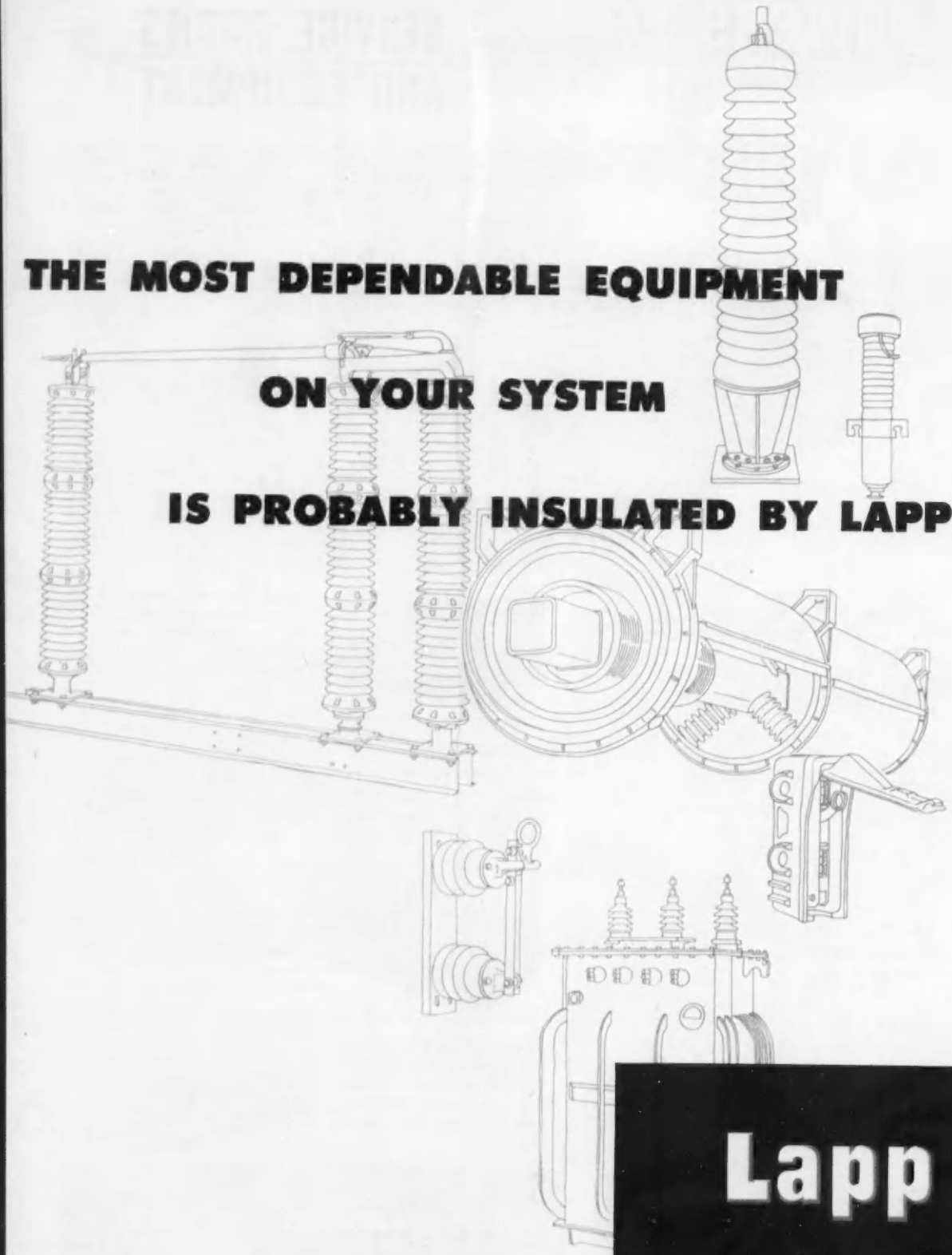
UTILITY TRAILER & EQUIP. CO.
3400 Sixth Ave., South
SEATTLE, WASHINGTON

WIN WARD COMPANY
962 Price St.
POMONA, CALIFORNIA

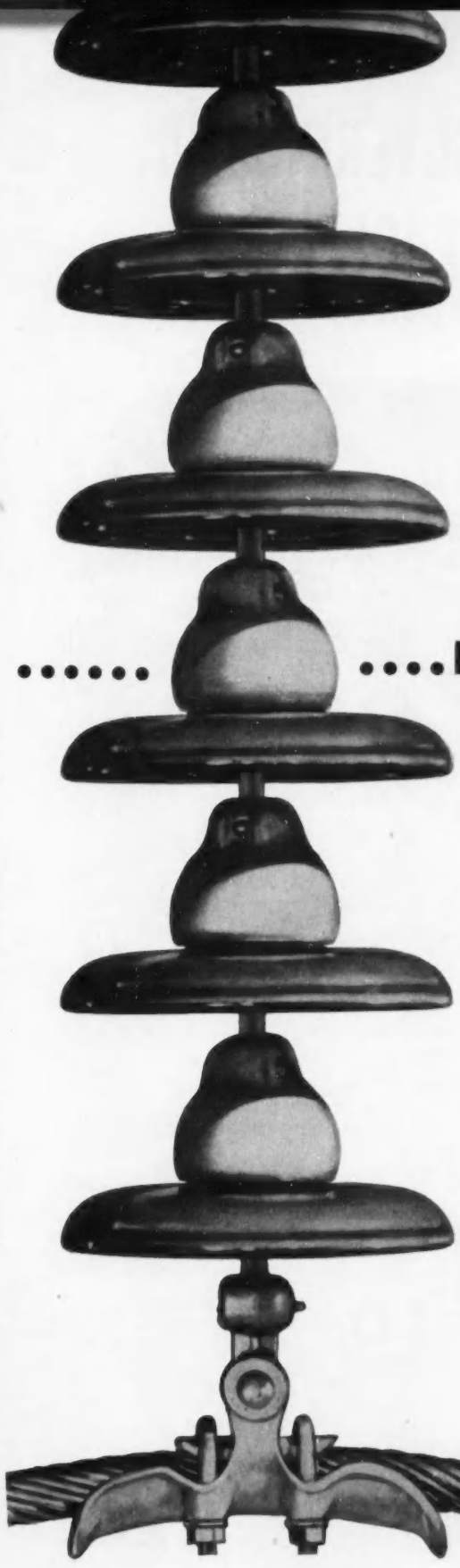
THE MOST DEPENDABLE EQUIPMENT

ON YOUR SYSTEM

IS PROBABLY INSULATED BY LAPP.....



Lapp



....HOW ABOUT

YOUR

TRANSMISSION LINES?

Manufacturers of the best in switches, transformers, lightning arresters, fuse boxes, and other high-voltage electrical equipment look to Lapp for insulators and "special porcelain" insulating components. That's because they know porcelain-and-metal assemblies produced by Lapp offer an extra margin of operating security . . . long life . . . and low upkeep. Lapp porcelain adds value, because it adds dependability, to such equipment.

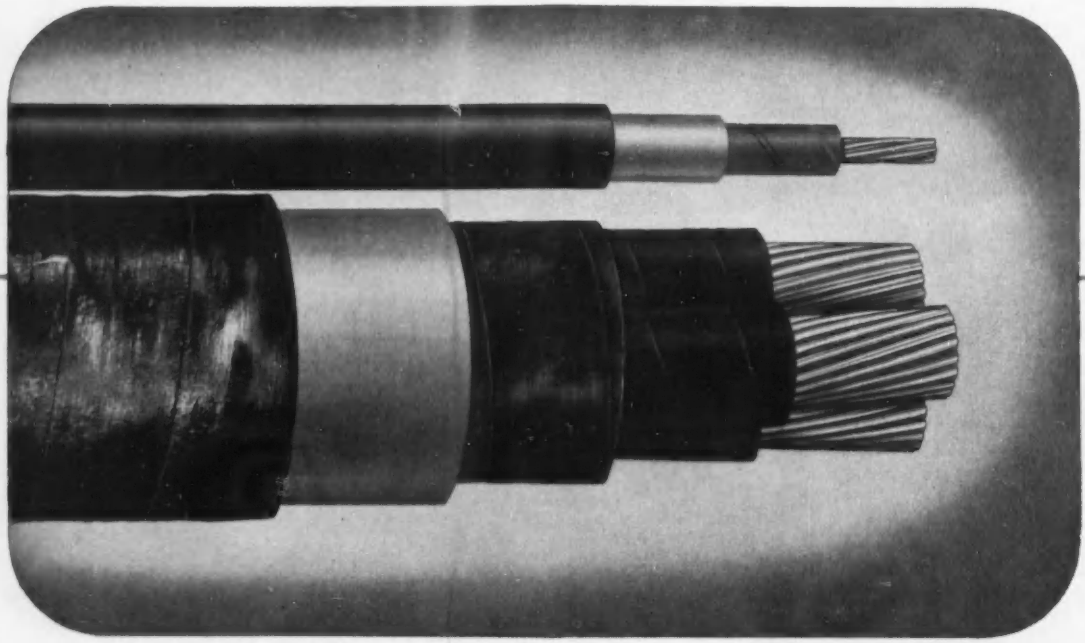
The porcelain-and-metal assembly of which Lapp has made more units than any other, is the 10″ suspension disc. This "simple design" has had more research and testing than anything else we have ever worked on.

We know, as do hundreds of power companies, that there's no surer way to build security and long service into a transmission line than to hang it on Lapp suspension insulators.

Lapp Insulator Co., Inc., Le Roy, N. Y.

ROEBLING PROTECTIVE COVERINGS ON LEAD SHEATHED CABLE

for utilities, chemical plants and the petroleum industry



LEAD SHEATHED CABLES used in certain applications by public and private utilities, chemical plants and the petroleum industry are often impaired by electrolysis or chemical corrosion. But such corrosive action can be effectively reduced, and cable life extended, by using Roebling Paper Insulated and Varnished Cambric Cables with either of two outer protective coverings.

One of these coverings is an extruded thermoplastic sheath employing a special high-molecular weight polyethylene. The other is ROESHEATH, built up of neoprene and neoprene-filled fabric tapes and vulcanized directly over the lead sheath. Both coverings not only provide essential protection, but, in some cases, may permit the thickness of the lead sheath to be reduced.

For longer, more dependable cable life and worthwhile economy write for full information... and get our recommendations for solving any special problem.

John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

A subsidiary of The Colorado Fuel and Iron Corporation

ROEBLING

ATLANTA, 934 AVON AVE • BOSTON, 51 SLEEPER ST & 5 PITTSBURGH ST • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 3253 FREDONIA AVE • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST • DETROIT, 915 FISHER BLDG • HOUSTON, 6216 NAVIGATION BLVD • LOS ANGELES, 5340 E. HARBOR ST • NEW YORK, 19 RECTOR ST • ODESSA, TEXAS, 1920 E. 2ND ST • PHILADELPHIA, 230 VINE ST • ROCHESTER, 1 FLINT ST. • SAN FRANCISCO, 1740 17TH ST • SEATTLE, 900 1ST AVE S. • ST. LOUIS, 3001 DELMAR BLVD • TULSA, 321 N. CHEYENNE ST • EXPORT SALES OFFICE, TRENTON 2, NEW JERSEY

CF&I

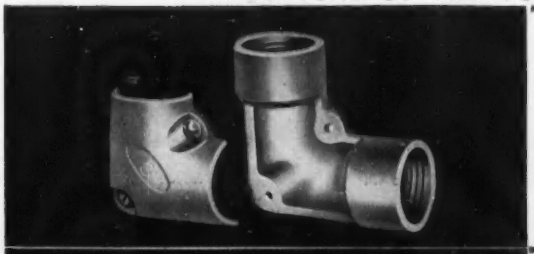
JAR ROEBLING

FOR CORNER PULL-IN ELBOWS, 3-PIECE CONDUIT COUPLINGS, PIPE STRAPS—CLAMP BACKS—NEST BACKS

GEDNEY *ALWAYS!*

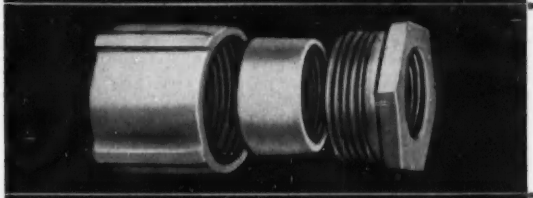
NATURALLY you want to cut installation time and costs. And you'll do it easily with Gedney Fittings, for these fittings are accurately machined and threaded, smooth finished, individually inspected to ensure top quality. What's more, Gedney Fittings are made of unbreakable malleable iron. For best profits, order Gedney always!

TYPICAL OF THE COMPLETE GEDNEY LINE ARE:



Corner Pull-In Elbows in ½", ¾" and 1" sizes. Ideal for space-saving, machine wiring, easy wire pulling. Cadmium plated.

Now available in 1¼", 1½" and 2" sizes



3-Piece Conduit Couplings in a large range of sizes from ½" to 6". Cadmium plated.

One-Hole Pipe Straps, Clamp Backs, and the handy new Gedney Nest Backs. These supplementary spacers nest firmly behind the Clamp Backs — use as many as you need to hold pipe at desired distance from wall. Hot dip galvanized to prevent corrosion.

GEDNEY FITTINGS FIT

GEDNEY
ELECTRIC COMPANY

GEDNEY

RKO BLDG. • RADIO CITY • NEW YORK 20
Foundry, Factory and Shipping Point: Terryville, Conn.

CONVENTIONAL 7-CONDUCTOR #9 AWG IN 1¼" CONDUIT.

ALMOST

DOUBLES YOUR CONDUIT CAPACITY

PNR 12-CONDUCTOR #9 AWG IN 1¼" CONDUIT.

ROCKBESTOS PNR

SMALL DIAMETER CONTROL CABLE

Here's a smaller, lighter control cable that saves you labor, conduit, fittings. Approximately ½ the size of conventional control cable, Rockbestos PNR lets you pull 12 conductors where before you had only 7.

Millions of feet are now in service. Get the full PNR story. Find out where it can save you time and money.
Write today, or call in your nearest Rockbestos representative.

PROPERTIES OF PNR

46% smaller in area . . . 28% smaller in diameter than conventional control cable. Use smaller conduit and fittings or put more conductors in existing conduit.

Lighter, easier to handle, store, ship, pull through conduit.

Dielectric breakdown . . . over 40 times operating voltage.

Rated 600 volts . . . conductor operating temperature 168°F.

Flexible from 168° to —67°F. No cracking!

ROCKBESTOS PRODUCTS CORPORATION
NEW HAVEN 4, CONN.

NEW YORK • CLEVELAND • DETROIT
CHICAGO • PITTSBURGH • ST. LOUIS
LOS ANGELES • NEW ORLEANS
OAKLAND, CALIFORNIA • SEATTLE

Allis-Chalmers
Open—Drip-Proof
MOTORS

Greater Protection Against Foreign Matter
Long-Life Bearings
Many Tried and Proven Features

new motors new values

Here are a few of the reasons why the new Allis-Chalmers open—drip-proof motor in NEMA rerate sizes gives you better performance and lower maintenance costs in general-purpose applications.

- *Better protection against falling water and debris because cooling air inlets are on bottom.*
- *Long bearing life because large grease chambers provide plenty of reserve lubricant and are thoroughly sealed against foreign matter.*
- *Quieter operation, smoother performance.*

GET COMPLETE INFORMATION NOW

Allis-Chalmers, Milwaukee 1, Wis.

Send for these bulletins:

- ☐ Open — Drip-Proof, Type G, 5186210
- ☐ TEFC, Type GZ, 5187225
- ☐ Explosion-Proof, Type GZZ, 5187286

Name.....

Company.....

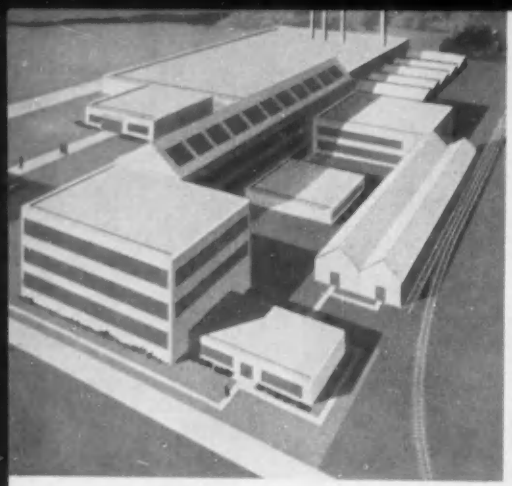
Position.....

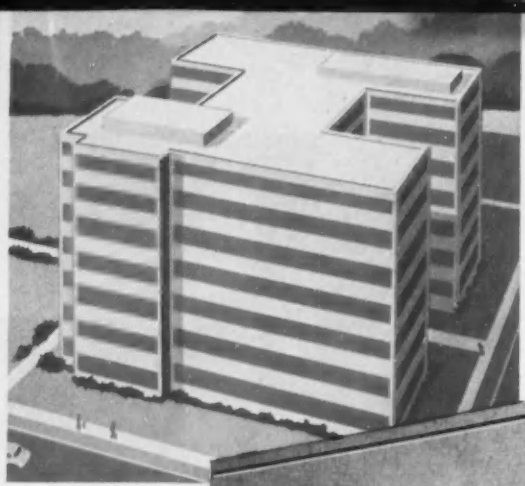
Address.....

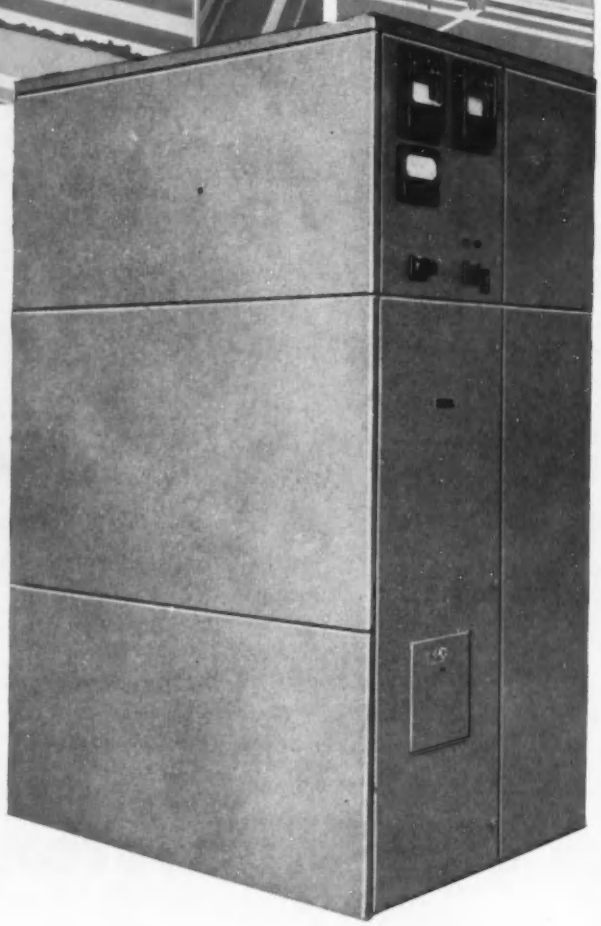
City and State.....

A-4281

ALLIS-CHALMERS





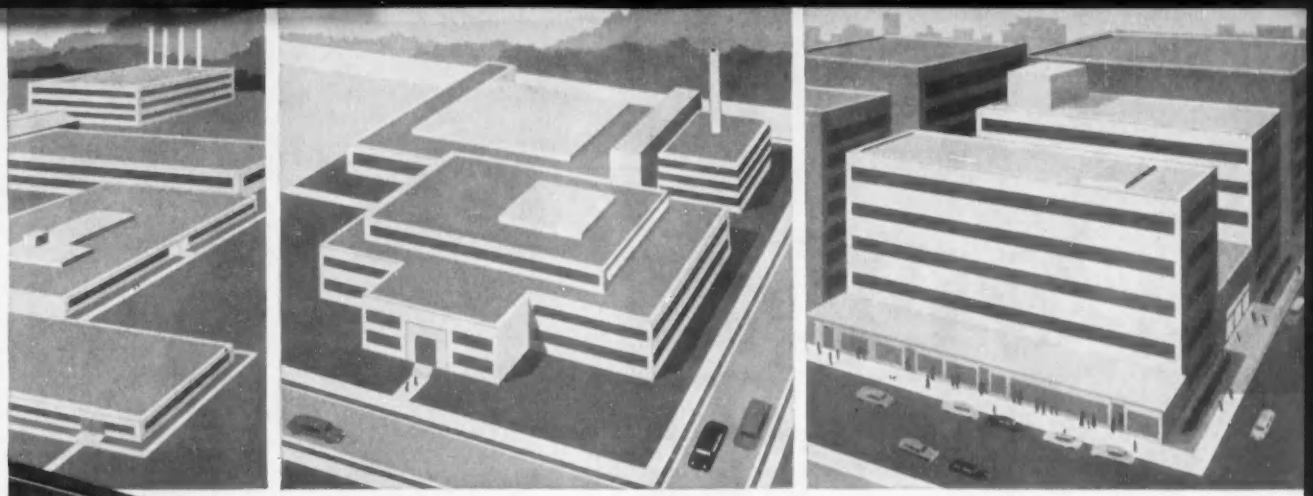


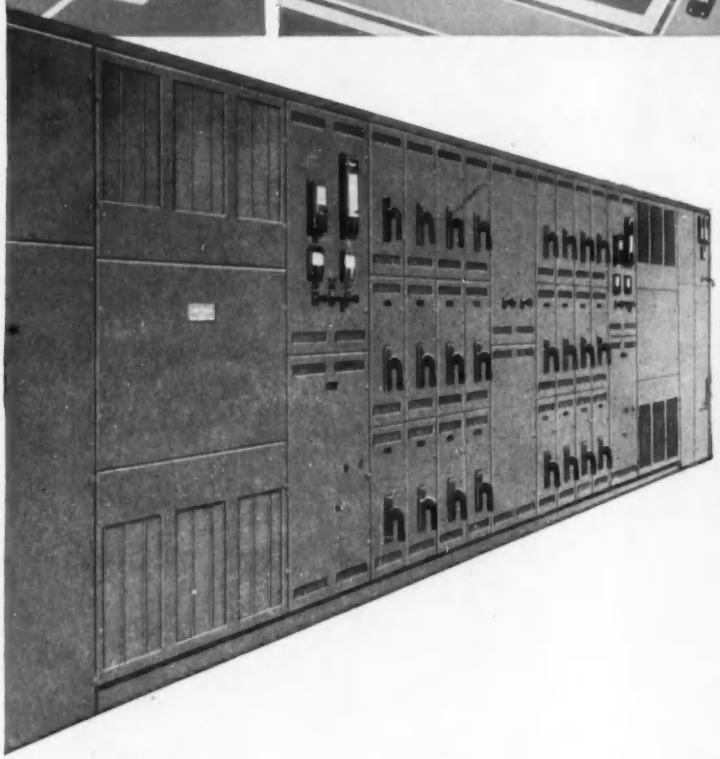
AS VITAL AS YOUR PLANT'S FOUNDATION

unit substations are basic plant investments

In central stations, industrial plants, or buildings—engineering management recognizes the need for power distribution equipment which is safe, dependable, economical, and adaptable. To Unit Substations, forming the *nerve centers* of any distribution system, is delegated the important responsibility of providing continuous power and circuit protection for years to come. Unit Substations, therefore, should not be merely *adequate*, but they must have quality to be a sound, *profitable* capital investment.

THE SYMBOL OF QUALITY SWITCHGEAR





I-T-E offers a complete line of quality unit substation equipment

Through the years, I-T-E has led in the development and manufacture of quality circuit breakers and switchgear. Similarly, since the inception of the Unit Substation, and its use in modern distribution systems, I-T-E has continued to hold this same envied position. Today, I-T-E supplies a full line of quality Unit Substations, in types and sizes to fit every application.

As an *extra service*—to help users make the wisest investment possible—I-T-E furnishes engineering assistance in the selection and application of equipment, preparation of specifications, and coordination of all job requirements. There are I-T-E Application Engineers in every major industrial area for this purpose.

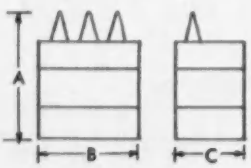
To find the I-T-E field office nearest you, look in the classified section of your telephone directory under "Electrical Equipment."

I-T-E Circuit Breaker Co., 19th and Hamilton Sts. Philadelphia 30, Pa.

UNIT SUBSTATIONS

THE A B C's OF TRANSFORMER MANUFACTURE

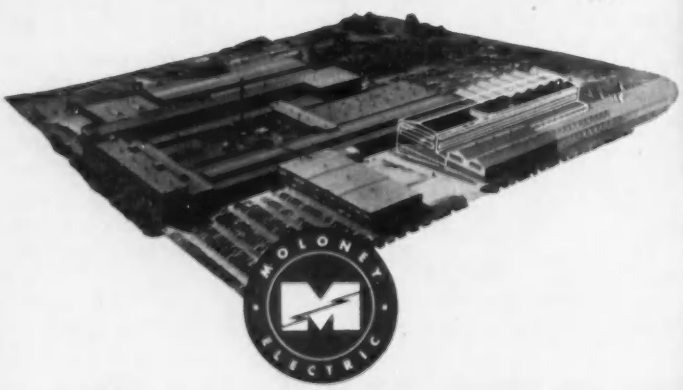
The three dimensions for transformers in the blueprint stage, as shown in diagram, are A, B, and C, the physical measurements of a product. This product would be of little value to today's utility without the coefficient A, B, C of knowledge, facilities, and experience as basic elements of the manufacturer.



The A B C's of transformer manufacture are the combined result of utility demands and manufacturing know-how. Needs expertly calculated by the utilities have made mandatory the possession by manufacturers of A, a high level of knowledge; B, wide facilities; and C, depth of experience.

Moloney is fully qualified in the A, B, C's of transformer manufacture. Since 1896 it has been building and expanding its facilities, its knowledge and its experience to parallel, and to anticipate, utility needs. Now, once again, another long step forward has been taken in increasing facilities here at Moloney so that we can continue to produce transformers capable of superior operation in the high ratings so necessary to today's utility.

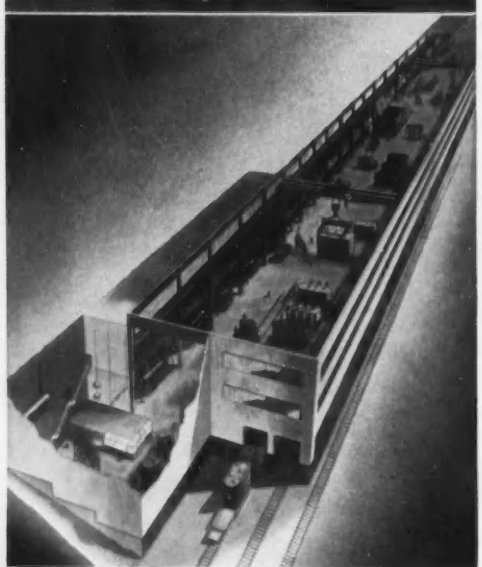
ME54-4

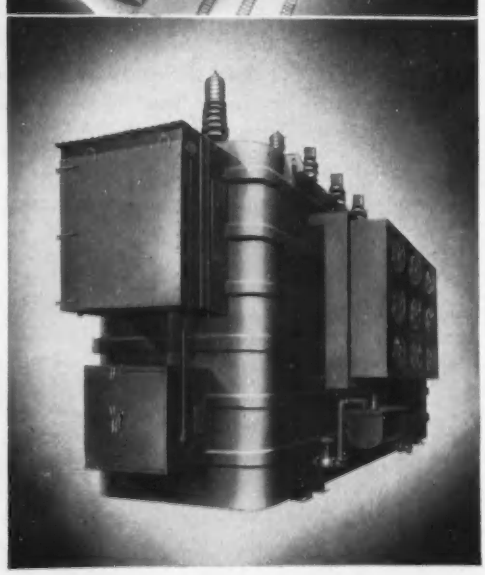


MOLONEY ELECTRIC COMPANY

Manufacturers of Power Transformers • Distribution Transformers • Load Ratio Control Transformers • Step Voltage Regulators • Unit Substations • Electronic Transformers

SALES OFFICES IN ALL PRINCIPAL CITIES





No. 5
IN A SERIES

AN ENGINEER ASKS—

"why, even in severe sleet storms which caused conductor and tower failures, have we never had a mechanical failure with a PINCO 1060?"

HERE'S THE REASON

The answer to this question can be summed up in one statement . . . it is because Pinco Suspension Units are *designed and built to meet service needs* and not just to meet specification requirements. In other words, the correct basic design and rugged construction of Pinco Suspension Units provide extra mechanical and electrical strength for that added margin of safety even under the worst operating conditions.

PINCO SUSPENSION INSULATORS are *better* insulators because—

they are 10% HEAVIER!...
at least 20% STRONGER!...
and 25% BETTER ON IMPACT TESTS!... proof that they are always "RIGHT for the Job" and "RIGHT on the Job." Remember this when you specify and buy suspension insulators.

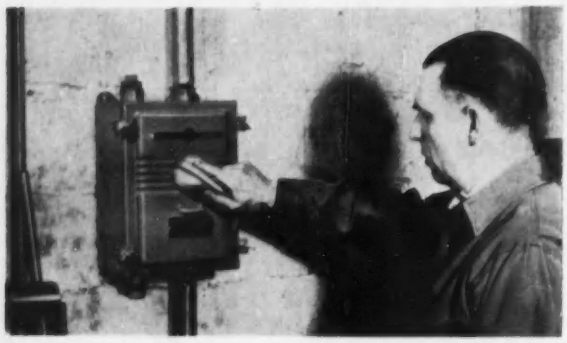
• For complete information regarding the Pinco 1060 and other Suspension Insulators, refer to Pinco Catalog No. 49, Pages 62 to 73.

PINCO INSULATORS

The Porcelain Insulator Corporation
LIMA, NEW YORK

RIGHT ON THE JOB—

PRODUCT NEWS



Enclosures

(1) Trumbull Components Department, General Electric Co., Plainville, Conn.

New lead-plated sheet-steel enclosures for safety switches and circuit breakers are designed for outdoor use and other special applications where cast-iron enclosures previously were used. According to the manufacturer, tests have shown that the inert lead coating effectively resists corrosive effect of acid, alkali and salt spray. Lead-plated enclosures are lighter and easier to handle and install, the manufacturer points out.

Circuit Breaker for Panelboard Line

(2) BullDog Electric Products Co., Detroit 32, Mich.

The Duo Guard Pushmatic, which incorporates separate thermal and magnetic elements, has been made the standard circuit breaker for the manufacturer's Electri-Center panelboard line.

The protective mechanism consists of two elements, a bimetal strip and a multiple-turn solenoid. The thermal element (bimetal strip) protects branch circuit wiring and insulation, from the panelboard to receptacle or outlet, from any kind of thermal overloads and prevents nuisance tripping, the manufacturer states. The magnetic element (multiple-turn solenoid) provides instantaneous protection for lamp and appliance cords from receptacles or outlets to all properly connected electrical equipment. It also protects branch circuit wiring, it is stated.

Other Pushmatic features are included in the Duo Guard, including push-button control, day or night identification of off button and bolt-tight installation.

These breakers come in 15, 20, 30, 40 and 50 amp, 1 pole, 120 v, a-c. They are listed by Underwriters'.

Fill in the Coupon on Page 56

High-Pressure Side-Break Switch

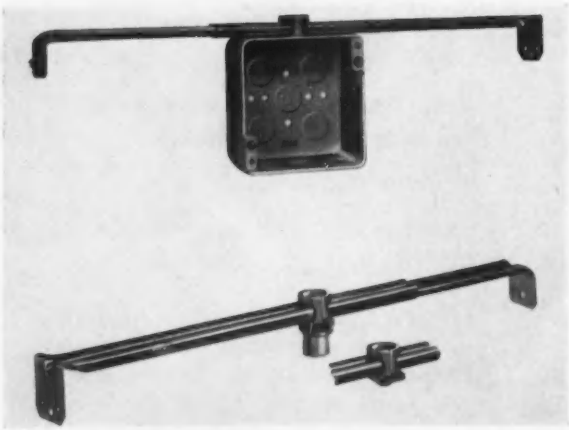
(3) Southern States Equipment Corp., Hampton, Ga.

The type 57-K high-pressure side-break switch is available in voltage ratings of 7.5 through 69 kv and in continuous current ratings of 400, 600 and 1,200 amp. It was designed for isolating, by-passing, disconnecting or line sectionalizing on transmission and distribution systems.

Induction Motor

(4) Westinghouse Electric Corp., Box 2099, Pittsburgh 30, Pa.

The Life Line-A, new induction motor, was designed for longer life, greater flexibility in application, higher reliability and smaller size, its manufacturer states. Other features listed in the announcement are improved ventilation, better insulation, more efficient and better protected bearing. It is quieter and smaller per horsepower, conforming to new NEMA standard dimensions. It comes in three enclosures: totally enclosed fan cooled; totally enclosed nonventilated; dripproof. Wire, coil, dip and cable insulations are all new.



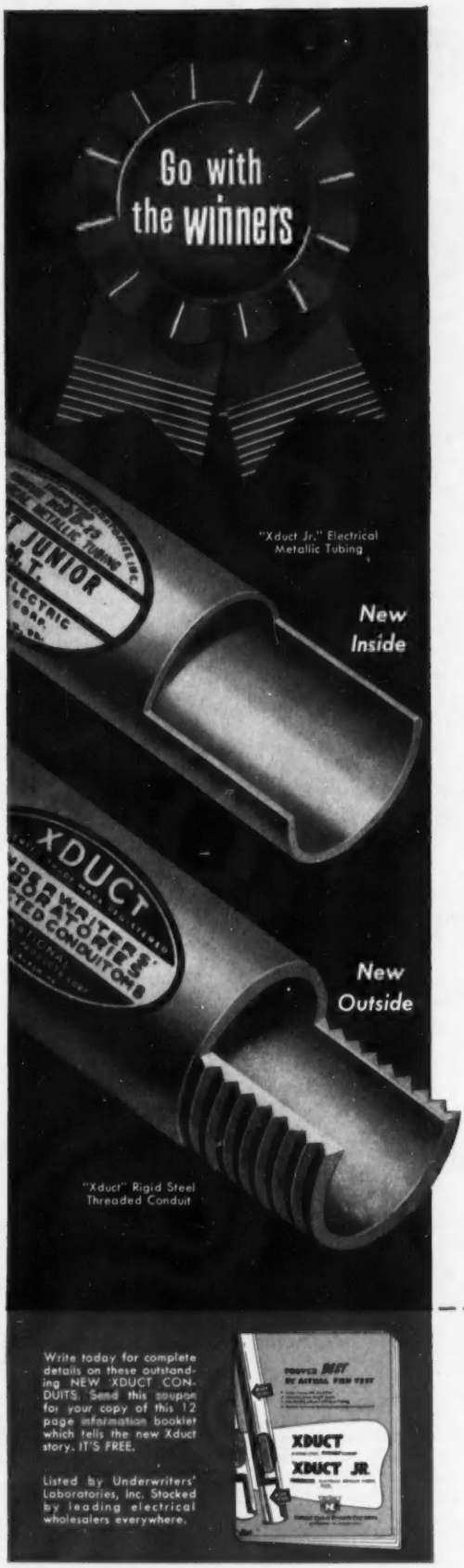
Adjustable Bar Hanger

(5) All-Steel Equipment Inc., Aurora, Ill.

A special shape is claimed to add great strength to this new bar hanger. Adjustment is obtained by a telescoping action of the two halves of the hanger similar to the action of an adjustable curtain rod.

A clip secures the box to the bar without interfering with device space in the box. It also gives added wiring room in multiple-device boxes, the manufacturer states.

The new bars come in two styles, clip and stud. Each bar style comes in two sizes to fit various studding spacings. Both styles fit all sizes of furring and studdings from 1x2 to 2x4 in. and all sizes of joints and rafters. The hanger is designed to fit modern shallow-wall construction.


Go with the winners
"Xduct Jr." Electrical Metallic Tubing
New Inside
XDUCT
New Outside
"Xduct" Rigid Steel Threaded Conduit
Write today for complete details on these outstanding NEW XDUCT CONDUITS. Send this coupon for your copy of this 12 page information booklet which tells the new Xduct story. IT'S FREE.
Listed by Underwriters' Laboratories, Inc. Stocked by leading electrical wholesalers everywhere.
XDUCT
XDUCT JR.

"National Electric XDUCT" conduits

These are the features that make the *new* National Electric Xduct Conduits sure winners with electrical contractors everywhere:

1. Easiest Fishing Conduit!

"Xduct's" new baked-on inside coating of aluminum enamel provides minimum friction between conduit wall and wires. The result: Fishing tests conducted with five other leading brands of conduit prove "Xduct" is 66% easier to fish on constant pull—more than twice as easy to start.

2. Maximum Corrosion Resistance!

Pure zinc is deposited *uniformly* over the entire outside surface of "Xduct" conduit by a new electroplating process. The result: a protective coating that adheres positively to the basic steel.

3. Positive Thread Protection!

Sharp, clean threads of "Xduct" rigid steel conduit are machined before galvanizing to assure complete protection from end to end. The result: every hill and valley of threads are completely galvanized.

4. Superior Working Qualities!

Xduct's high-ductile steel assures easy bending, cutting and threading.

EVERYTHING IN WIRING POINTS TO

National Electric Products

TORRANCE, CALIFORNIA

Branch Offices: San Francisco • Seattle • Denver • Los Angeles • Salt Lake City • Portland

NATIONAL ELECTRIC PRODUCTS CORP.
140 Stanwix Street, Gateway Center, Pittsburgh 22, Pa.

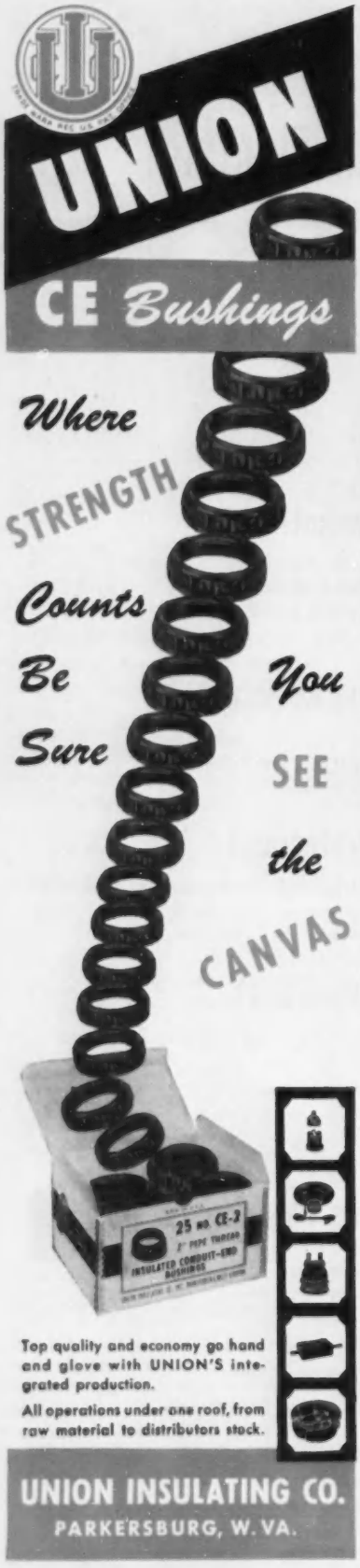
Please send me your free booklet on the new Xduct Conduits.

Name_____

Title_____

Company_____

Address_____



Switch

(6) General Electric Co., Schenectady 5, N. Y.

A manual starting and overload switch was designed to control fractional horsepower motors where line current overload protection is required. It is essentially a start-stop switch with manual reset overload.

Protection against overload is provided during both starting and running through the use of a nichrome heater and a nickel alloy bimetal strip in the tripping mechanism. Depressing the start button during overload will not re-energize the motor until the overload condition is removed and the bimetallic strip returns to normal position.

Applications suggested by the manufacturer are on washing machines, clothes dryers, lawn mowers and similar appliances.

Combination Starters

(7) Ward Leonard Electric Co., Mount Vernon, N. Y.

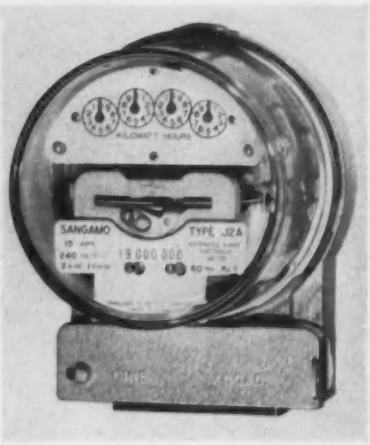
New a-c combination starters with disconnect switches, bulletin 4120 J.I.C., are intended for use wherever non-reversing magnetic across-the-line starters with disconnect means at the starter location are specified. They are for applications in plants where controls are subjected to splashing oil or coolant.

Component parts include a magnetic full-voltage starter, a dual-voltage control transformer and pilot circuit fuse in combination with either a fusible or nonfusible disconnect switch. All parts are fastened to a removable steel panel mounted in a NEMA type XII enclosure. Maximum ratings: NEMA size 3, 50 hp, 440 v, three phase, 60 cycles.

Sound Signal

(8) Benjamin Electric Mfg. Co., Des Plaines, Ill.

Designed primarily for fire and air raid signaling, this new siren features a compact design and a powerful, distinctive signal. The G-E motor is rated at 1/5 hp at 10,000 rpm. Motor parts are assembled in a precision-machined cast-iron housing which, in turn, is in a sheet-steel casing. A rubber washer between the castings prevents moisture from entering. A ½-in. iron-pipe threaded bushing is furnished for ½-in. conduit. By loosening two steel bands, the device can be rotated to permit easier alignment of the conduit. Two holes are provided for mounting.



Meter

(9) Sangamo Electric Co., Springfield, Ill.

Type J2, a new 15-amp single-phase watt-hour meter was designed to give ample reserve capacity. Its low disk speed, high torque and straight-line accuracy to 100 amp without sacrifice of performance at light loads anticipates continued rapid growth of residential loads, increasing service life of the meter, the manufacturer states. The new meter is described in bulletin 210, which gives specifications, performance curves and other engineering data.

(10) WIRE GUIDES—D. Z. wire guides are claimed to make pulling electric wires through conduits a one-man operation. No feeder is needed at start of conduit, regardless of the number of wires that are pulled through, it is stated. Guide consists of a tempered steel spring attached to a lightweight knurled aluminum body that screws onto the conduit. Smooth contours of spring end are said to eliminate stripping and shaving of insulation on the sharp edges of conduit or box. The device is made for standard conduit sizes of ½, ¾, 1 and 1¼ in. and special sizes may be secured from the manufacturer, George G. Zachary, 10132 E. Rush St., El Monte, Calif.

(11) CONNECTOR — A corrosion-resistant parallel-groove connector for transmission and distribution lines can be installed as a unit, according to its manufacturer, The Thomas & Betts Co., Elizabeth, N. J. Accidental removal of the nut holding the assembly together is prevented by burring the end of its bolt, it is stated. Specially shaped contact faces are claimed to accommodate well over 100 combinations of copper, aluminum or ACSR conductor diameters from No. 6 to 4/0 A.W.G.

(12) BRACKET—Available in 3, 7, 13 and 19 in. lengths, a new one-piece mounting bracket for cable, pipe, conduit, etc., has been announced by The Rakit Corp., 711 S. 50th St., Philadelphia 43, Pa. The new support can be placed securely into slotted vertical channel pieces with a twist of the wrists, the manufacturer states.

Continuous glazing machines like this give Victor insulators an even coat of uniform thickness.

Another Reason Why—

VICTOR Makes Better Insulators

WE USE AUTOMATIC GLAZING MACHINES

PERFECTION of glaze makes an insulator self-cleaning, gives it higher mechanical strength and greater resistance to thermal variations.

By designing and building its own automatic machines, Victor gives you this glazing perfection. Each insulator is thoroughly and evenly coated with glaze. Timing is accurately controlled for maximum penetration at the interface of the insulator body and the glaze.

That's why Victor gives you smooth, perfectly glazed insulators that stand up under the most severe conditions of service . . . that cut maintenance and replacement costs to a minimum. For the full story, send for our free booklet, "The Story of Victor and Purified Porcelain."

VICTOR NO. 900 SUSPENSION INSULATOR

Specify

VICTOR PURIFIED PORCELAIN INSULATORS

VICTOR INSULATORS, INC., VICTOR, N. Y.

Low and High Voltage Pintypes • Suspensions • Guy Strains • Spools • Switch and Bus Insulators

• Custom Designed Porcelain • Insulator Hardware

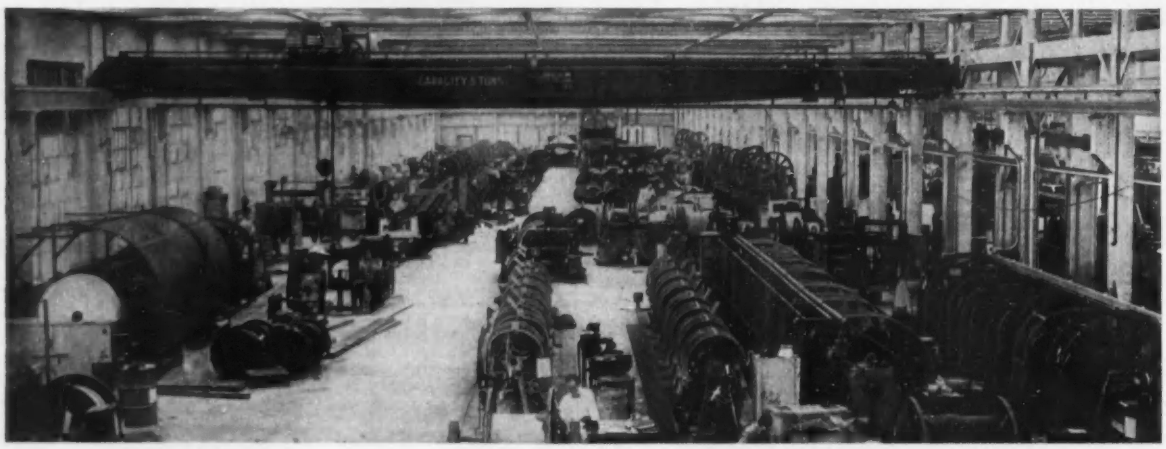
INCREASING USE OF ELECTRICITY CALLS FOR MODERN DISTRIBUTION SYSTEMS

General Electric's expanding wire and cable facilities and services can help you handle new or greater loads

The load doubles every ten years—say competent authorities. This load growth means, of course, that bigger and more flexible distribution and generation systems will have to be planned, installed, and maintained. To assist you, General Electric has expanded its facilities, and is prepared to help you and your customers in the application, use, and maintenance of modern distribution systems.

1 PLANNING AND APPLICATION.

G-E wire and cable specialists are ready to help your customers select and plan cable systems with the capacity and flexibility needed for their growing loads.



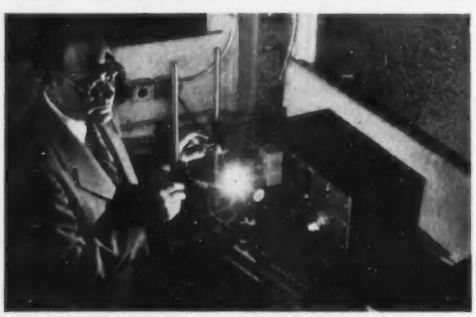
2 WIRE AND CABLE AVAILABILITY.

General Electric is adding a new wire and cable plant to its facilities in Bridgeport, Connecticut, to continue to supply you and your customers with products on which distribution and generation systems depend. This new plant will be able to produce more cable faster, and will supply you with new cable products to meet new needs.

If you want help NOW . . . just call your G-E wire and cable specialist, or write Section W124-325, Construction Materials Division, General Electric Company, Bridgeport 2, Connecticut.

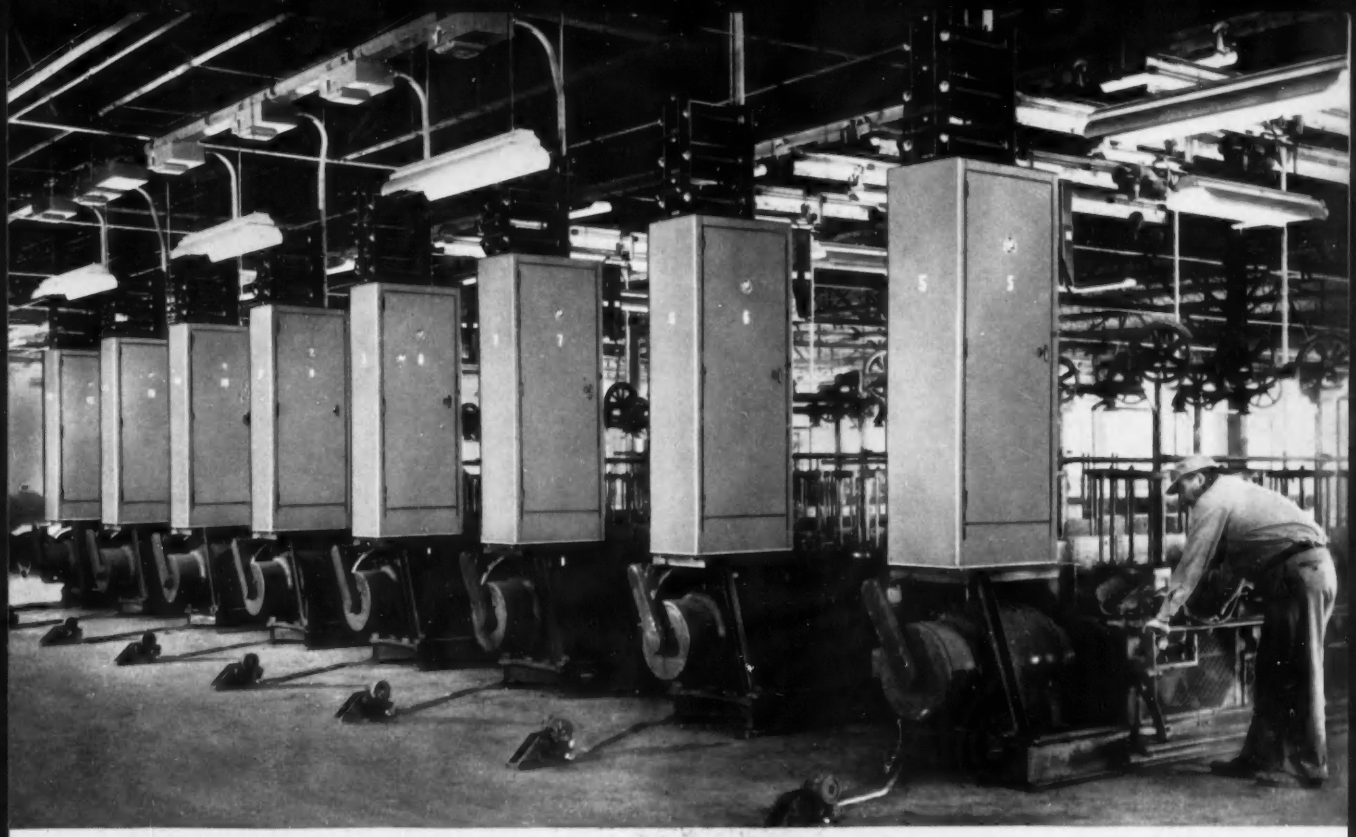
You can put your confidence in—

GENERAL ELECTRIC



3 MAINTENANCE OF CABLE SYSTEMS.

General Electric's test facilities help minimize maintenance problems. Thorough production-line testing, coupled with research and developmental testing, give you wire and cable products with longer life and coordinated insulation levels. (This spectrographic test for copper conductor purity is one example of G.E.'s laboratory testing.)



Eight Allen-Bradley Bulletin 761 100 hp automatic slip ring motor starters on wire drawing machines in Kansas City plant of Union Wire Rope Company. A total of 14 —100 hp 4-point starters, 2 —50 hp 4-point starters, and 2 —50 hp 3-point starters are included in this installation.

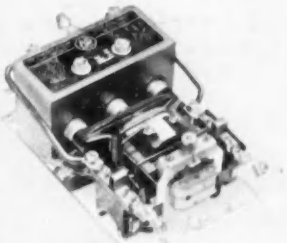
100 HP Solenoid Operated

SLIP RING MOTOR STARTERS

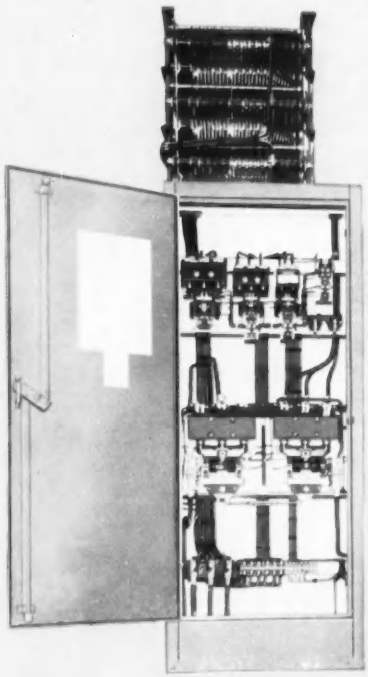
provide trouble free control for wire drawing machines

The accelerating contactors and the magnetic switches in these Allen-Bradley Bulletin 761 Slip Ring Motor Starters are simple, solenoid operated units. There is only one moving part . . . the one-piece solenoid plunger with double break, silver alloy contacts. Such simplicity assures long, trouble free life. The silver alloy contacts require no maintenance.

In this installation the grid type accelerating resistors are mounted above the starter cabinets. Timing relays on starter panel govern rate of acceleration. The operator merely pushes the START button . . . and the Bulletin 761 starter goes through the complete starting cycle automatically. When you have a tough control problem, consult Allen-Bradley.



Basic unit is the A-B solenoid starter with overload relays.



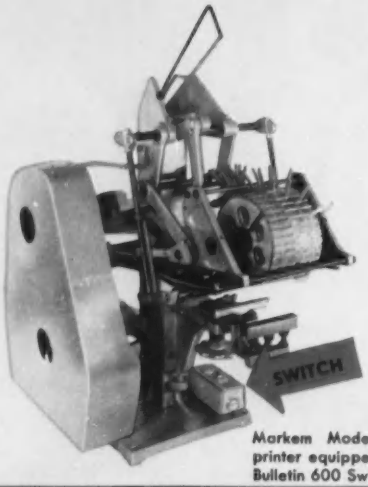
Bulletin 761 automatic slip ring motor starter (100 hp) with cabinet open to show panel of solenoid contactors, starters, and timing relays.

Allen-Bradley Co.
1316 S. Second St., Milwaukee 4, Wis.

ALLEN-BRADLEY
SOLENOID MOTOR CONTROL
QUALITY

2-54-M

Markem Model 105 heavy duty box and label printer equipped with an A-B Bulletin 600 Manual Starting Switch.



Markem Model 45AC printer equipped with a Bulletin 600 Switch.

Markem No. 2 embosser for indenting and coloring on plastics, wood, leather, etc., with A-B Bulletin 600 Switch.

SNAP SWITCH *with* OVERLOAD BREAKER FOR 1 HP MOTORS AND SMALLER

● Burnouts of small motors can often cause serious production delays. Therefore, dependable overload protection is absolutely essential . . . and for motors of 1 hp or less the Allen-Bradley Bulletin 600 Starting Switch is the logical answer.

It has a built-in thermal overload breaker which trips the toggle switch in case the motor is overloaded . . . and you can't keep the switch closed until the overload on the motor is cleared.

The Bulletin 600 Manual Starting Switch is ideal for small a-c and d-c motors on space heaters, stokers, refrigeration compressors, fans, pumps, packaging machines, labelers, grinders, and other light machinery.

Available in open type construction and also in standard sheet metal enclosures, waterproof and weatherproof enclosures, and gastight enclosures for installations in hazardous gas locations.

Bulletin 600 Manual Starting Switches can be furnished in various auxiliary combinations—namely, with pilot lights, selector switches, and key and lever switches, as illustrated below. They will fit into standard conduit switch boxes if desired. The double break, silver alloy contacts need no attention. Bulletin 600 gives dimensions and other data.

Allen-Bradley Co., 1316 S. Second St., Milwaukee 4, Wis.

A few examples of the variety of enclosure combinations in the Bulletin 600 Manual Starting Switch line.

A-B Quality

ALLEN-BRADLEY

BULLETIN 600 STARTING SWITCHES

QUALITY

2-54-MR

Electrical Cable

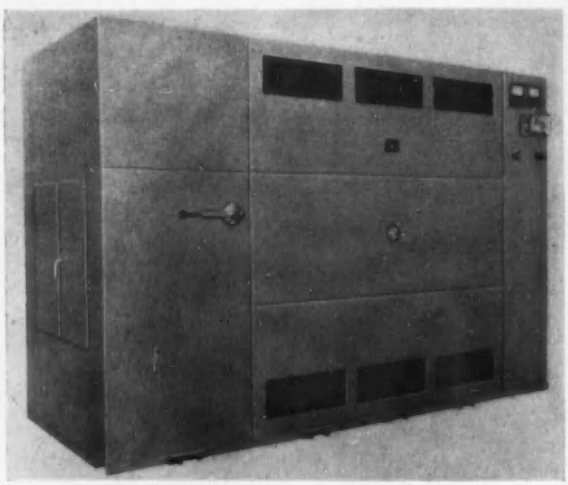
(13) Rome Cable Corp., Rome, N. Y.

A new low-cost multipurpose cable for branch and feeder circuits on farms, in industry and in homes has been announced under the name FlexAll. According to the manufacturer, it was designed especially for underground feeder service and for installation in locations where dampness or corrosive action are encountered.

It is available in single-, two- and three-conductor construction, all approved by Underwriters' and recognized by the NECode, 1953, the manufacturer states. Single-conductor FlexAll is approved as type UF and two- and three-conductor as both type UF and type NMC. Multiple-conductor FlexAll also is suitable for interior wiring, either exposed or concealed and in wet or corrosive locations, installation in hollow spaces of masonry block or tile walls or embedded in plaster or shallow chase in masonry, when suitably protected.

The single-conductor cable has an integrally applied insulation and sheath of Synthinol, type TW, thermoplastic compound. Two- and three-conductor cable is insulated with the same compound and individual conductors are covered with a glass yarn wrap. The assembled conductors have an exterior sheath of Synthinol that is resistant to abrasion, moisture, corrosion and flame. The multiple conductor has a smooth, pearl-grey surface.

Single conductor comes in sizes 14 through 4 AWG; multiple conductor cable in 14 through 10 AWG. Two-conductor cable can be obtained with or without ground wire. Further details in bulletin RF-1.



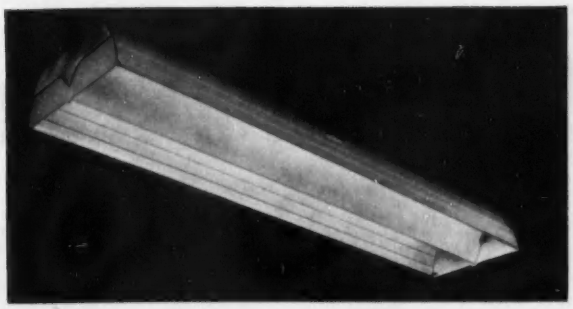
Unit Load Center

(14) Marcus Transformer Co., Hillside, N. J.

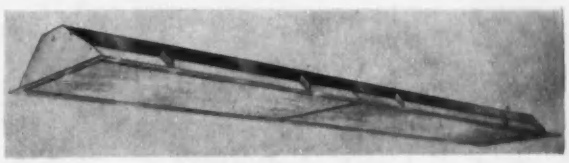
This 2,000-kva unit load center features built-in automatic forced draft equipment to increase capacity under overload conditions.

It is rated: primary 4,800, 60 cycles, three phase; secondary 480 v. The unit is packaged complete with fused load break air switch on primary and secondary metering and pull section. Primary switch handle and access door are interlocked for safety, the manufacturer states.

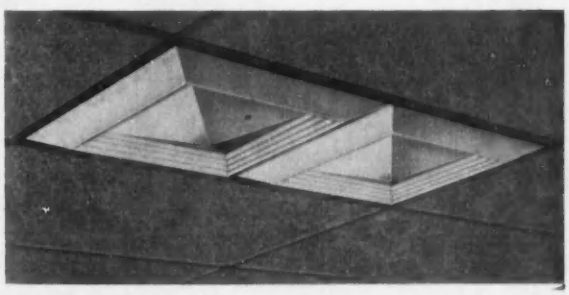
It has class B high dielectric, high heat magnet wire insulated with Johns-Manville Quinterra and Dupont's Mylar polyester film.



(15) AN INDUSTRIAL-COMMERCIAL fixture, this IC-2905 fluorescent fixture is one of a series designed by Sylvania Electric Products Inc. for high levels of quality illumination. It is a 5-ft fixture with 42° side shielding and no louvers. Details may be secured from the manufacturer at 1740 Broadway, New York 19



(16) MADE IN FLUORESCENT OR SLIMLINE models, holding two or three 72-w lamps, these new troffers come in lengths of 48, 72 and 96 in. Standard units are furnished with Alba-Light flat or curved low-brightness glass panels but other types of glass may be requested. Glass is mounted in hinged, channeled frame with latch release for easy removal and positive closing. Without coupling, a series of units may be abutted and perfectly aligned, the manufacturer states. Depending on type of installation, units are provided with suspension yokes for plaster or acoustical frames. Metal finishes are rust-inhibited. Manufacturer is Smoot-Holman Co., 321 N. Eucalyptus, Inglewood, Calif.

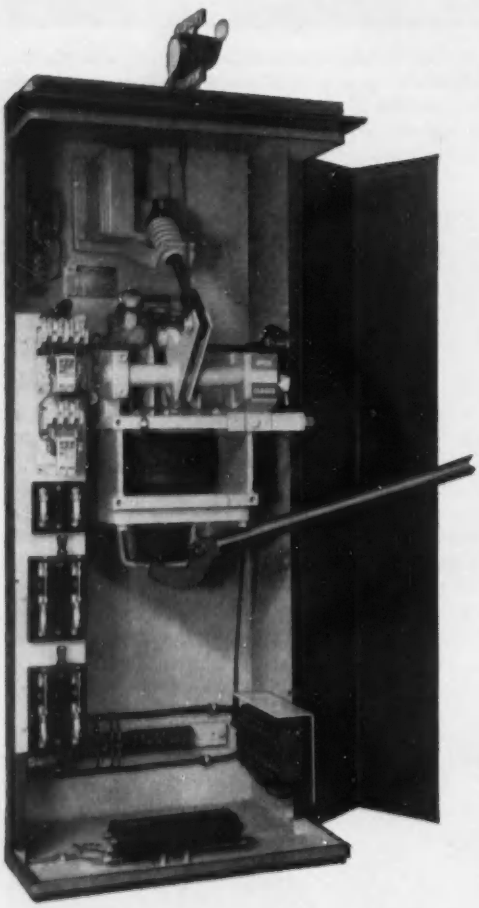


(17) THIS LARGE AREA recessed unit was designed for high levels of uniform low-brightness lighting in commercial interiors. Designated No. HDP3600 series, it is available in modular units of 2x2, 2x4 and 2x8 ft (nominal dimensions), which may be mounted singly or in patterned arrangements in any standard installation method. All standard units take four, six or eight single- or bi-pin fluorescent lamps. Diffusing panels, designed to harmonize with contemporary motifs, are of molded translucent Plexiglas. Other diffusing elements, such as metal louvers that give 32° or 45° shielding and ribbed glass, are available. These light modules may be used in conjunction with suspended grid ceilings in new or remodeled installations. Units are inserted in grid opening and supported by longitudinal tee runners. Pivot straps are provided on corners of fixtures so they may be suspended independently of grid where conditions require the additional support. The series of recessed units is made by Sunbeam Lighting Co., 777 E. 14th Place, Los Angeles 21, Calif.

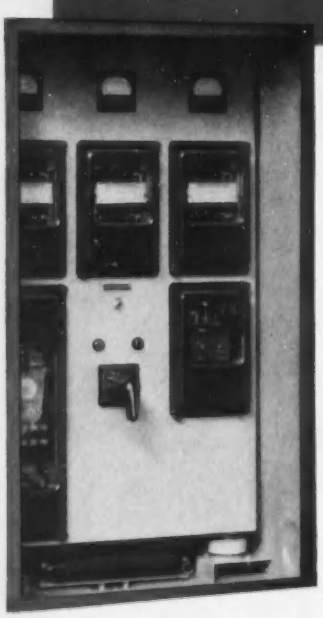
If You Worked on Breakers....

this is the breaker you'd buy!

The minute you open the operating cabinet you have the story. Clean design! Everything you ever wanted to get at for any reason is right out in the open. Check a few of the many features of this outstanding breaker, then GET COMPLETE INFORMATION! Call your nearby A-C district office, or write Allis-Chalmers, Milwaukee 1, Wisconsin. A-6252



ROOMY OPERATOR CABINET. Access to operator is unrestricted. Operator is high speed solenoid type—mechanically and electrically trip-free. Side hinging of L-shaped doors allows access to operator cabinet from three sides. Only 7 inches of clearance needed in front of cabinet to open doors.



RELAY CABINET. Relays when specified are in separate cabinet, which can be secured against unauthorized personnel. Relay panel is fixed. This eliminates troublesome hinge wiring. Door at rear provides access to back of relays. Panel is shock-mounted at four points so relay contacts are not operated accidentally by breaker vibration or slamming of cabinet door.

A-C ALLIS-CHALMERS

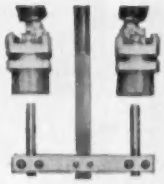
ALLIS-

ALLIS-CHALMERS 14.4-kv Oil Circuit Breakers

TANK-PER-PHASE construction — as used in large breakers — has high safety factor. It completely isolates phases and eliminates possibility of internal phase-to-phase flashover. A maximum of 12 gallons of oil in each tank makes it a simple matter to raise and lower tanks.

VISIBILITY PLUS — external position indicator easily visible at a distance from front or side. Contact position indicator also provided inside. In addition, maintenance closing device is side operated. Man closing breaker can observe contacts and man working on them.

DOUBLE BREAK per phase principle is used with time-proved *Ruptor* interrupting devices. Self-wiping, self-aligning tulip and bayonet contacts are used. Here again, Allis-Chalmers provides the same quality construction as is used on large A-C breakers.



NO BURIED LEADS. No more conduits, pipes and fittings! To get at bushing current transformer leads, simply remove 3 pins at bottom of fabricated wiring duct and remove bottom plate. This is typical of the well-engineered features that make this breaker outstanding in its field.

Ruptor is an Allis-Chalmers trademark.

BREAKER RATINGS (8-Cycle Standard Interrupting Time)

Type	Rated Kv	Rated Amps	INTERRUPTING RATING RMS TOTAL AMPERES At Rated Volts	Maximum Rating	Kva	Weight of Breaker With Oil (lbs)
OZ-15-100	14.4	600	4,000	15,000	100,000	2,350
OZ-15-250	14.4	600	10,000	25,000	250,000	2,370
OZ-15-250	14.4	1200	10,000	25,000	250,000	2,470
OZ-23-250	23	600	6,300	12,000	250,000	2,370

CHALMERS

WHEEL TURNERS FOR YOUR BUSINESS
Better Machinery—for exacting production, lower cost.
TRI-STATE
The Coil Winding Equipment Company
ELECTRONIC COIL AND TRANSFORMER WINDING EQUIPMENT
MOTOR WINDING, TAPING AND SPREADING MACHINERY
Potter and Rayfield, Inc.
Ideal Industries, Inc.
ELECTRICAL SOLDERING, STRIPPING AND TESTING TOOLS
AUTOMATIC CUTTING AND STRIPPING MACHINERY
Artos Engineering Company

TRI-STATE represents the manufacturers who *specialize* in electrical, electronic production machinery.

TRI-STATE has the engineering *know-how* and *past experience* to recommend a tested and proven solution to *your* electrical, electronic production problems.

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LOS ANGELES 13 • 544 South San Pedro St. MUtual 2354
SAN FRANCISCO 7 • 554 Bryant Street EXbrook 2-8890
SEATTLE 4 • 318 Occidental Avenue Main 4161

Polyester Resin

(18) General Electric Co., Chemical Division, Pittsfield, Mass.

A new polyester resin, AR493 is claimed to have chemical and heat resistance superior to that offered by conventional styrene polyester resins. According to the manufacturer, its higher heat resistance favors its widespread use in electrical applications. AR493 glass cloth laminates may have maximum continuous operating temperatures as high as 150 C and intermittent temperatures as high as 250 C may be tolerated, it is stated.

Separator Light

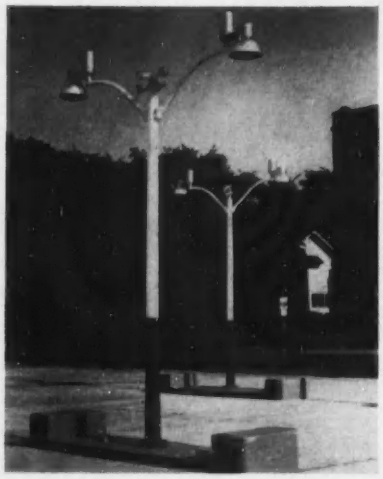
(19) The Pyle-National Co., Chicago 51, Ill.

This new weatherproof vaportight traffic separator light is designed for flush mounting in the raised horizontal surfaces of curbs, safety islands and walks.

An inside frosted lamp, an Alzak parabolic reflector and a 5⅜-in. stepped lens give a combination of a flush fixture with a beam that can be seen clearly by motorists from a distance and still not have an objectionable glare at close range, the manufacturer states.

Lens and clamp ring are gasketed to make a vaportight seal and are easily removed for relamping, it is pointed out. These VSL lights are available with or without Alzak reflector for 15- or 25-w lamp sizes tapped for ¾- or ½-in. conduit.

For More Data Fill in Coupon, Page 56



Island Light Pole

(20) Revere Electric Mfg. Co., Department 893, 6009 Broadway, Chicago 41, Ill.

For mercury vapor and incandescent lighting, this new island light pole has a double upsweep arm available in 4, 6 or 8 ft lengths.

According to the manufacturer, it is possible to light a gasoline station island with one of these poles, which can be anchored to position the arms parallel or perpendicular to the island. When the arms are in perpendicular position more light is distributed on the face of the pumps, it is stated.

Cluster lighting may be used in the center for illuminating buildings or other objects. Water and air connections also can be incorporated in the base.

This equipment is adaptable for new or existing stations.

Indicating Lights

(21) General Electric Co., Schenectady 5, N. Y.

Heavy-duty oiltight indicating lights for the manufacturer's line of oiltight pushbuttons, selector switches and accessory controls are available in three forms, resistor, transformer and full voltage, rated from 110 to 600 v with a 10-amp continuous rating.

All-glass faceted lenses are factory sealed to metal caps and feature all-angle visibility. They come in six colors: red, green, white, blue, amber and clear. The lights are designed for both front and back mounting.

(22) **LAMP** — A 200-w standard-voltage incandescent lamp of the same physical size as the 150-w PS-25 has been announced by Westinghouse Lamp Division, MacArthur Ave., Bloomfield, N. J.

High in Profit... low-cost electrical radiant heating

U.S. Rubber's USKON® ceiling panels put you in the heating business

What does USKON mean to the Electrical Contractor?

FIRST, it can be quickly and easily installed—the panels *now* can be applied in sheet form to existing ceilings. No extensive wiring or alterations needed. A minimum of trouble and time for you. It keeps your costs down.

SECOND, Uskon is a proven seller. With Uskon the homeowner knows he can heat his house as it grows; when he wants to finish expansion attic, he merely orders some more Uskon panels from you. This is truly the heating system that fits everybody's needs and offers you repeat business.

THIRD, Uskon is a product of United States Rubber Company. It has been tried and proved for several years with complete success in homes, apartments, offices, expansion attics, commercial and industrial buildings, bathrooms, sun porches, game rooms, garages, basements, motels, summer cottages. Uskon has revolutionized electrical radiant heating!

Everybody wants USKON electrical radiant heating! Architects like the freedom of design it gives them—no radiators, furnaces, pipes, ducts, and so on. Decorators like Uskon for the same reason, plus the fact that it can be painted over with any ordinary flat paint.

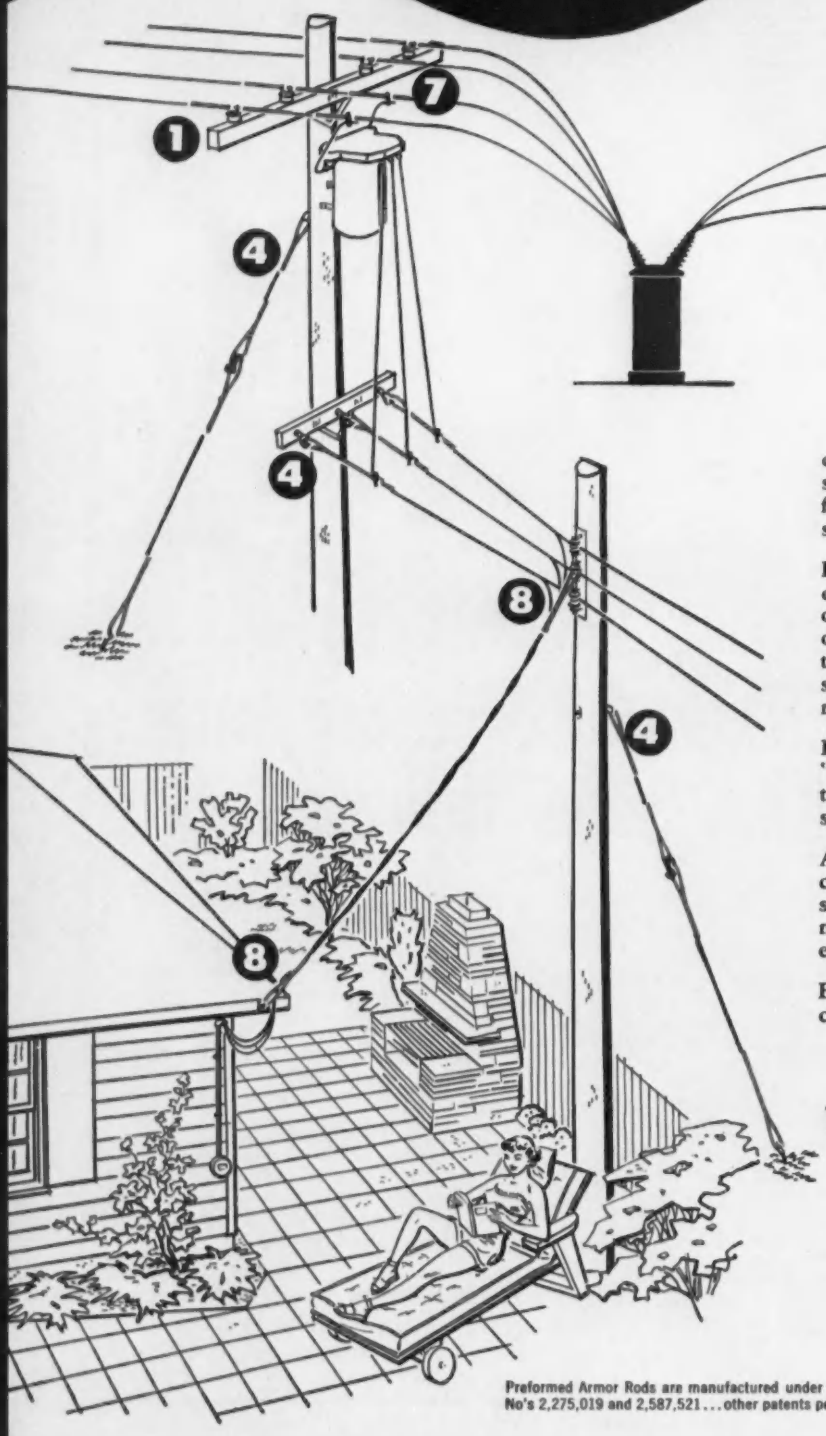
Home Owners prefer Uskon because it costs less to install than almost any other kind of heating—and because it gives quick heat with a switch or thermostat. Uskon can be installed in one room or in all rooms; completely eliminates every kind of nuisance found in ordinary heating systems. Approved by Underwriters' Laboratories, Inc.

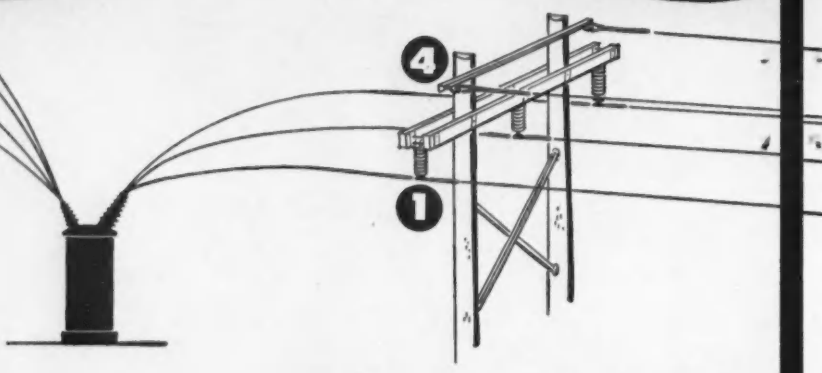
As an electrical contractor, you will find Uskon electrical radiant heating to be one of your most profitable items. It is made by United States Rubber Company, a great name known for quality products everywhere—a name that helps you sell. For complete technical data and cost information write for Catalog M3177, Mechanical Goods Division, United States Rubber Company, Rockefeller Center, New York 20, N. Y.

US RUBBER

UNITED STATES RUBBER COMPANY
MECHANICAL GOODS DIVISION
ROCKEFELLER CENTER, NEW YORK 20, N. Y.

"Preformed" MEANS SAVINGS





● From the ground-wire support on the largest transmission tower to the service drop on the smallest bungalow, Preformed Products are establishing new standards for each of their applications.

For example, PLP Dead-Ends can save 50% of labor and 20% of material. Current-carrying capacity of splices, dead-ends and damaged conductor can be increased more than 30%. Installation time is reduced substantially. No special tools or wrenches are required.

Because Preformed Products are precision "factory-formed" to the individual conductor or strand, they have a predictable field service performance.

Available in aluminum, copper, bronze, copperweld, stainless steel and galvanized steel, Preformed Products are supplying new answers to economically solve old expensive problems.

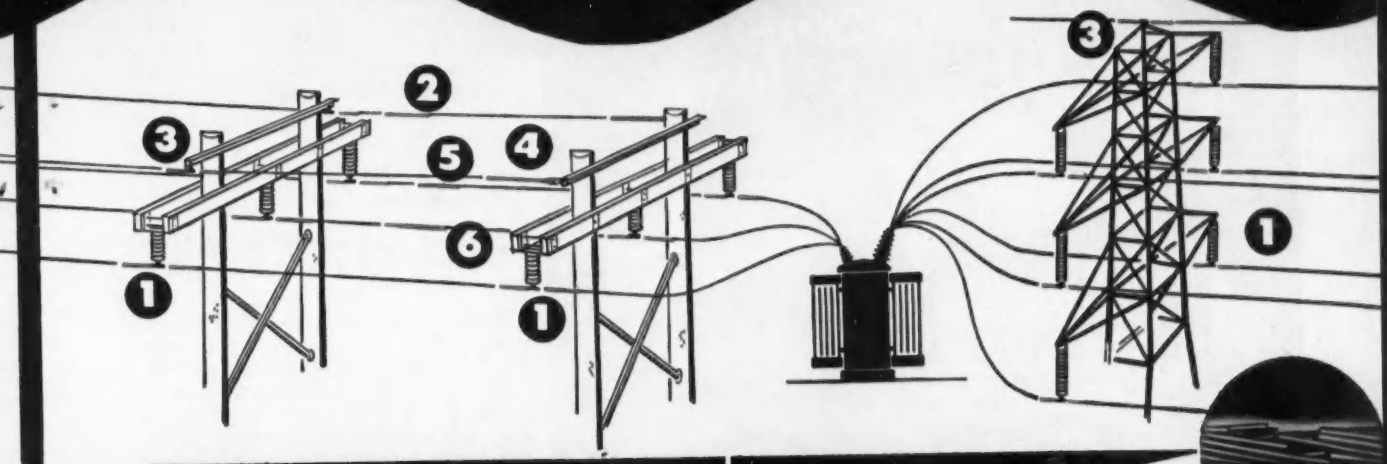
For details of their exclusive advantages, contact Preformed Line Products Company.

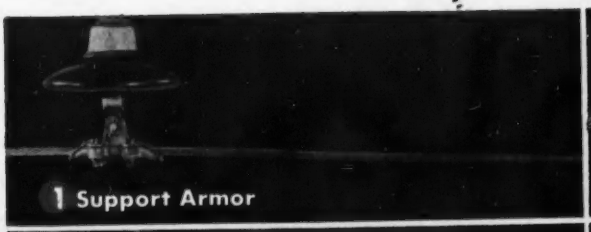
TELEPHONE — CLEVELAND: EXpress 1-3571

PLP

Preformed Armor Rods are manufactured under Patent No's 2,275,019 and 2,587,521 . . . other patents pending.

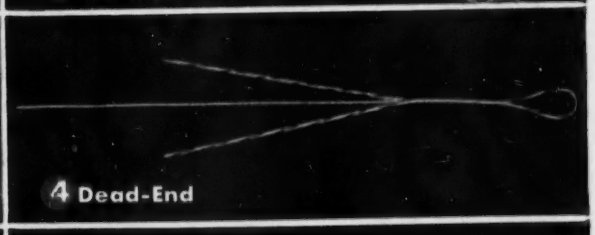
ALL ALONG THE LINE . . . . .

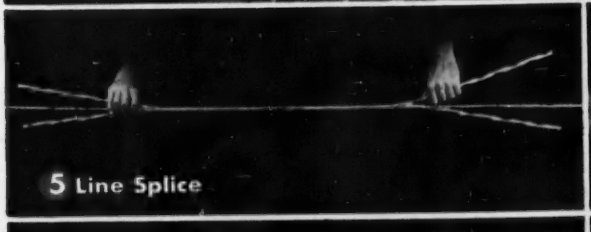


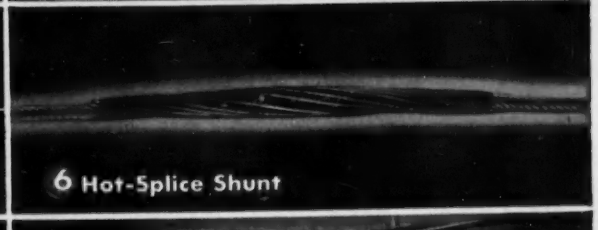

1 Support Armor

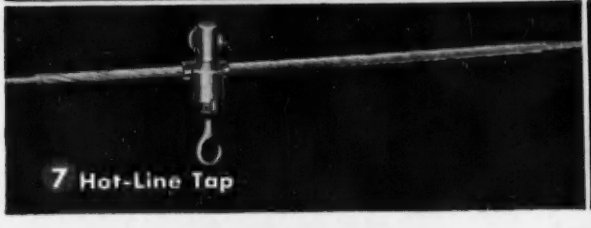
2 Repair Armor

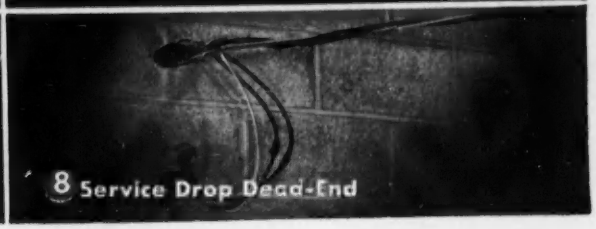
3 Strand Armor


4 Dead-End


5 Line Splice


6 Hot-Splice Shunt


7 Hot-Line Tap


8 Service Drop Dead-End

PREFORMED LINE PRODUCTS CO.

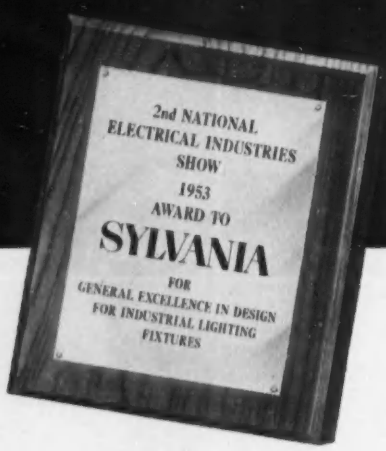
5349 ST. CLAIR AVENUE CLEVELAND 3, OHIO

BEST DESIGNED INDUSTRIAL FIXTURE

New Sylvania IC Fixture...

wins award for best design at Electrical Industries Show

SAVES MAINTENANCE DOLLARS, TOO!



In addition to top design honors, this improved Sylvania IC Fluorescent Fixture also wins in lighting efficiency and low maintenance.

Metal parts are Bonderite treated to resist deterioration. Channels, shielding, and steel panels finished in Sylvania's Miracoat baked enamel offer 86% reflectivity . . . keep their high efficiency for years.

Wonderfully versatile!

This fixture meets the needs of scores of industrial applications calling for high levels of illumination. Available in 4, 5, and 8-foot lengths, with V-type crosswise shielding or 45 x 45° louvers. Also may be equipped with the new T-17 low-brightness lamps for critical seeing tasks such as the machining of specular metals.

For full details about this important fluorescent unit, see your Sylvania Representative or write to Dept. 4X-2603, Sylvania.

SYLVANIA

Sylvania Electric Products Inc., 1740 Broadway, New York 19, N. Y.
In Canada: Sylvania Electric (Canada) Ltd., University Tower Bldg. St. Catherine Street, Montreal, P. Q.

LIGHTING • RADIO • ELECTRONICS • TELEVISION

Bushing

(23) The Thomas & Betts Co., Elizabeth, N. J.

A shatterproof insulating bushing for ½- to 6-in. standard rigid electrical conduit is made from a special cellulose acetate butyrate formula and, according to the manufacturer, will not shatter if accidentally struck or dropped during installation. The bushing is designed to conform to requirements of the NECode and is Underwriters' approved. Additional features include a fold-back throat, dual-purpose threads, ease of handling and bright blue coloring.

Wire Meter

(24) Olympic Instrument Laboratories, Department BE, Cove, Wash.

A measuring device for wire, cordage, TV ribbon, etc., has interchangeable guide tubes permitting capacity ranging from Nylon fishing leader to 1-in. diameter flexible electric cable or cordage. Counter indicates to 9,999 ft. An integral wax scraper cleans meter wheel. A cutter is available.

Aerial Ladder

(25) The J. H. Holan Corp., Cleveland, Ohio

A mechanical aerial ladder, series 2200, was designed for small operations or large ones with a limited need for this type of equipment. The ladder comes in three sizes, 23, 27 and 31 ft, ground to platform heights. Full extension, elevation to 72° and 360° endless rotation of ladder can be accomplished by one man operating handle cranks on the ladder pedestal mast, the manufacturer states. Manually operated lock pins hold the ladder securely in any of 11 positions. The fly section is extended and retracted by hand-operated windlass with brake.

(26) **TRUCK BODY**—Designed for utility service, this line construction body comes in lengths from 8 to 13 ft over-all and for single or dual-wheel chassis rated from ½ to 2 tons, with CA dimensions from 48 to 102 in. Designed to mount a winch and derrick, the body has a sliding roof, a front window and three stowage shelves running all around. On the outside it is equipped with ladder hooks, hand grips and three or more large compartments on either side. Made by Morysville Body Work, Dept. A-23, Boyertown, Pa.

For More Data Fill in Coupon, Page 56

CHANCE WN-VN SWITCHES

Eliminate Pole Top Switch Adjustments...

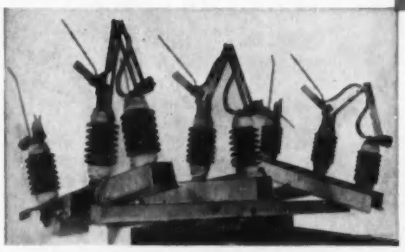
WN-VN blades are *always* in alignment

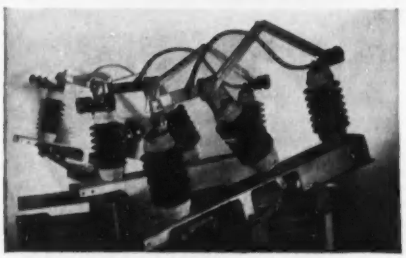
Forget maintenance problems on pole top switches. Chance WN-VN Switches *can't* get out of line!

Why? Because these pole top switches have the Chance Compensator Control that keeps the operating force in line with the blade motion. An extra wide tilting insulator mounting gives solid support that eliminates side-play. Bases are deep drawn and flanged —they won't cut into the wood supports and loosen the bolts— they resist twisting and side distortion.

Phantom view shows the exclusive shielded Compensator Control Mechanism that gives extra leverage —offsets structural distortion—prevents insulator shock from "slamins"—simplifies installation.

Type WN Switch 15 KV-400 Amp.





make positive contact under all conditions

You get top performance under all conditions with Chance WN-VN Gang Operated Switches. Switch blades *always* seat regardless of warping, twisting, settling or bowing of the supporting structure. The photographs at left show how the dead toggle on each base permits every blade in a three pole switch to make complete contact in spite of extreme distortion. No special adjustments were necessary to compensate for the distortion on this "torture rack" test.

* * *

Chance pole top switches are easy to install because the interphase shaft is simply lifted and clamped into position—you can even mount them below the pole top without shifting these switches off balance.

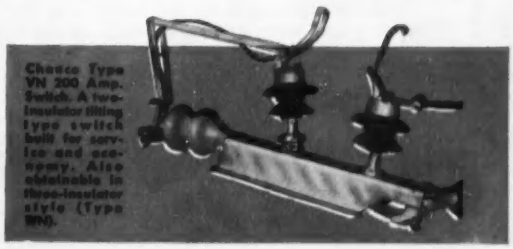
For conditions of extreme corrosion, a special protective Neoprene coating for the flexible braid is available at slight additional cost.

You know it's RIGHT when you specify CHANCE

A·B·CHANCE CO.

CENTRALIA, MISSOURI

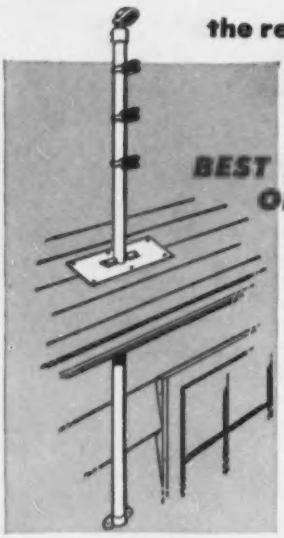
SAN FRANCISCO, CALIFORNIA



Chance Type VN 200 Amp. Switch. A two-insulator tilting type switch built for service and economy. Also obtainable in three-insulator style (Type WN).

CS54-1

Porcelain Products' Service Entrance Masts & Brackets



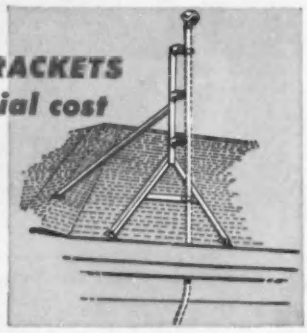
the real answer for new one-story ranch type houses that simply *have to* have elevated service entrances.

BEST 2 INCH PIPE MAST ON THE MARKET

The *only* pipe mast with exclusive patented roof plate to carry the load. Adjusts to any roof pitch. Pull of service drops distributed over the rafters by roof plate, fastened to the mast. Stronger than other styles with same wire clearance above roof because of its shorter cantilever. Roof plate absolutely prevents leaks from pipe sway, even in heavy storms. All parts hot-dip galvanized or aluminum alloy. Good looking. Simple to install—saves hours of labor. Ask for Series No. 2070.

ELEVATED ROOF BRACKETS

Low labor cost... low material cost



Built for strength and easy mounting. All three legs have pivoting mounting shoes, which lie flat against any roof. Simply mount front legs on rafter and rear legs will automatically find rafters. Because of pivots, and tripod design, there's minimum pull on threads of lag screws. Pull on brackets from any angle results in stress *across* screws. Bracket is die-formed and welded from hi-strength structural steel, hot-dip galvanized after fabrication. Ask for Series No. 2080.

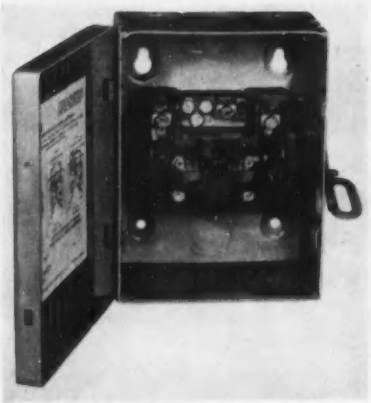
Sturdy... low cost... Non-Elevated Roof Brackets

Mount service drops directly on roofs, this approved *inexpensive* way. Hot-dip galvanized steel plate mounts *under shingles.* Mounting slots on 16" and 18" centers allow lag screws to hold plate to rafters. Practically no dead-end pull on lag screws, because pull of service drops results in stress *across* lags. Strong. Leak-free. Ask for Series No. 2090.

PP INC.

Porcelain Products, Inc.

PINCLEY, OHIO



Switch

(27) The Murray Mfg. Corp., 1250 Atlantic Ave., Brooklyn 16, N. Y.

Companion to front-operated raintight switches, this new 30-amp side-operated general-purpose safety switch has strong rotor blade construction that allows for cool operation and double break on each pole, the manufacturer states.

Specially designed built-in arc snuffers instantly divide and extinguish the arc, saving wear and extending contact life. Helper spring assures quick break action, it is stated.

These switches come in both two and three wire plug or cartridge fuse. They are suitable for use as service entrance equipment and are designed to protect light machinery.

(28) DETECTOR — An electronic detector will locate conduit, outlet boxes, steel reinforcements and heating pipes in walls, its manufacturer states. This device, model 202, is said to be simple to operate, moderately priced, small and compact. It can be used also to detect tools and other metal objects covered over by soil and sand. Details from Detectron Co., Department E, 5420 Vineland Ave., North Hollywood, Calif.

(29) AISLE MARKERS—Made of plastic, backed with pressure-sensitive adhesive, circular aisle markers can be used for making curved or straight dotted lines. Stock circular markers come in 2, 3, 4 and 5 in. diameter (directional arrows in same sizes) in yellow, red, green and white. Special sizes, colors and shapes will be made to order by the manufacturer, W. H. Brady Co., 727 W. Glendale Ave., Milwaukee 12, Wis.

(30) RECEPTACLE — A three-wire receptacle of the grounding type has been added to its industrial line by Rodale Mfg. Co. Inc., Emmaus, Pa. A 15-amp 125-v receptacle, it takes standard parallel or polarized parallel caps and is adaptable for back or side wiring. It features a specially constructed break-off point on terminals for two-circuit installations; will accommodate new grounding-type U-blade plugs as well as two armored or rubber caps.

EVEN *MORE* THAN
THE NAME IMPLIES

Cold-Forged — Pure Electrolytic Copper

BULLDOG WIRE GRIPS

for greatest strength, maximum conductivity

No bulldog's teeth ever made as perfect, powerful "contact" as those of a BullDog Wire Grip.

These wire grips are formed by a cold-forging process that increases mechanical strength. This permits high clamping pressures, assuring high electrical and mechanical efficiency.

BullDog Wire Grips assure maximum conductivity, too, because they are made of pure electrolytic copper—*not an alloy.* They are completely silvered. This construction prevents power-robbing oxide formation — makes perfect contact certain.

Available in open stock through your BullDog distributor. Five sizes handle every wire size. For free samples of sizes 1 and 2, demonstrating the BullDog Grip's many exclusive features, write "BullDog Grips" on your letterhead, and mail to: BullDog Electric Products Co., Dept. EW-34, Detroit 32, Michigan.

BULLDOG
ELECTRIC PRODUCTS COMPANY

CONSULT THE FOLLOWING PACIFIC COAST REPRESENTATIVES

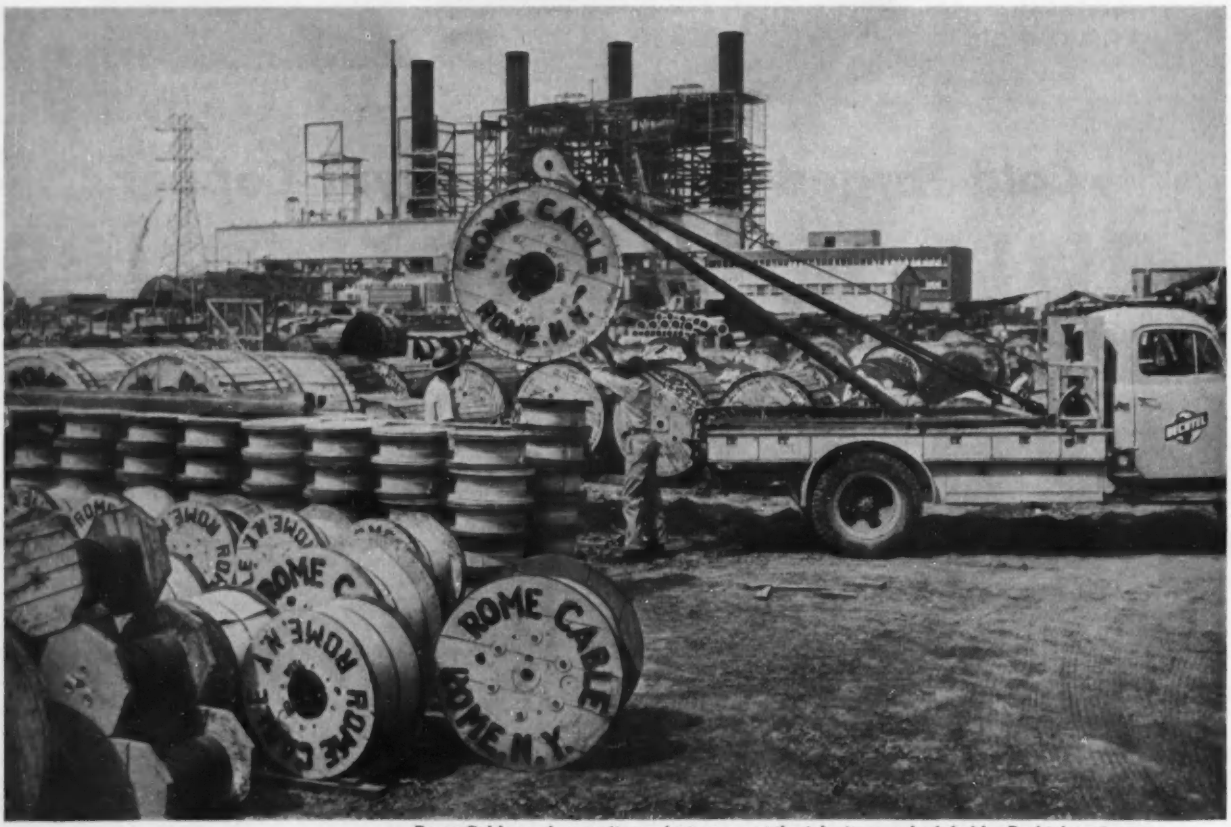
Coast Electric & Manufacturing Company
1733 N. E. Seventh Ave.—Tel. TUxedo 5191
Portland 12, Oregon

Safety Switchboard Company
910-89th Ave.—Tel. LOckhaven 9-7001
Oakland 21, California

BullDog Electric Products of Los Angeles
2885 E. Washington Blvd.—Tel. ANgelus 9-8101
Los Angeles 23, California

Young Electric & Manufacturing Company
2134 Curtis Street—Tel. AComa 4841
Denver 2, Colorado

This 600,000 KW plant of the P.G.&E. Co. now nearing completion at Pittsburg, Calif., will be the largest steam generating plant west of the Mississippi.



Rome Cable made sure its products were at the job site as scheduled by Bechtel engineers.

aids operation of the West's big new power plant at Pittsburg, California

Building ahead of demand to satisfy all requirements for power in the thriving Northern and Central California regions, this new 600,000 KW power plant nearing completion at Pittsburg, California, is another milestone in the $1½ billion postwar construction program of the Pacific Gas and Electric Company.

It's the biggest in the West—an $80,000,000 project.

Engineered and constructed to give adequate, uninterrupted power to this important region, only the most reliable materials and equipment would do. Engineers of P.G.&E. and Bechtel Corporation, Engineering and Construction Contractors on the project, approved Rome power and control cables. Previous experience with Rome cables had been gained in the building of the Contra Costa Steam Plant and other P.G.&E. plants and stations.

Aluminum Power Cables

Miles of Rome "RoZone-RoPrene" aluminum 5KV and 600 volt auxiliary power cables and copper control cables have gone into this new Pittsburg Station.

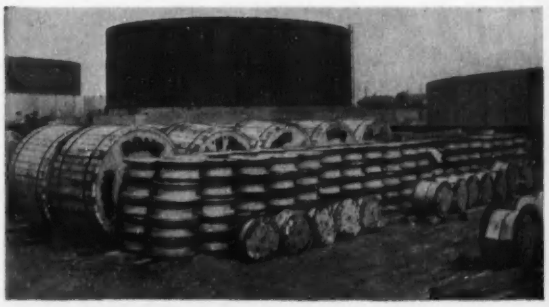
Cables with ozone-resistant insulation and neoprene sheaths were specified for this installation. RoZone is the ozone-resistant oil-base insulation developed in the Rome Cable laboratories for long service under severe conditions. It has excellent electrical properties, and exceptional stability in water. It shows remarkable resistance to ozone, moisture, and heat. Its dielectric strength exceeds 400 volts per mil.

RoPrene is the tough Neoprene sheath that protects these cables so effectively against abrasion and other mechanical damage, and that makes them so easy to pull into ducts and conduits.

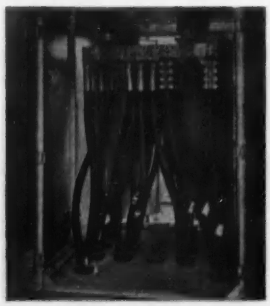
Ionization Level Tested

Every foot of Rome power cable rated at 3000 volts or over is subjected to ionization testing as a standard control procedure. In this non-destructive test, devised by Rome Cable engineers, the corona level of the entire cable is measured to make sure that the ionization voltage exceeds the intended operating voltage of the cable. This assures dependable service and long life, with correspondingly lower maintenance costs.

You can have the same assurance of quality and service, by specifying Rome cables. Write today for your copy of the Rome Power and Control Cable Catalog.



Approximately 37 miles of Rome copper control cables, and 12 miles of Rome aluminum power cables are among the products being used at Pittsburg plant.



One of the junction boxes at the Pittsburg plant, showing terminals of cables to busses.

ROME CABLE Corporation
ROME • NEW YORK
and
TORRANCE • CALIFORNIA

It Costs Less to Buy the Best

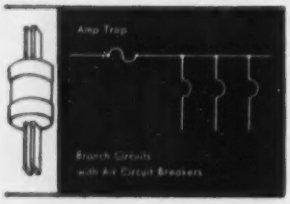
WESTERN SALES OFFICES AND WAREHOUSES

SALT LAKE CITY 1, UTAH — 230 South 4th West St.
LOS ANGELES 22, CALIF. — 2510 South Malt Avenue
SAN FRANCISCO 24, CALIF. — 1100 Selby Street
SEATTLE 4, WASH. — 3430 Fourth Ave., So.
DENVER 3, COLO. — 1160 Eliot St.
PORTLAND 5, ORE. — 1020 S. W. Taylor St.

Amp-trap®

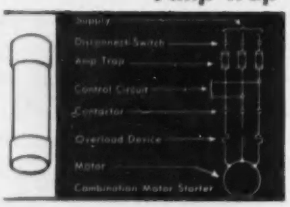
CHOPS DANGEROUS SHORT-CIRCUITS DOWN TO SIZE

Amp-trap with CIRCUIT-BREAKERS



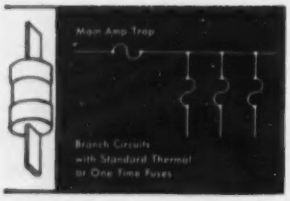
Amp-trap's lightning fast current limiting action makes it ideal for use in locations where the available short circuit current exceeds the circuit breaker's interrupting rating. It gives back-up, short-circuit protection to overload devices and clears a heavy short-circuit before the circuit breaker can open. Yet, the circuit breaker will open within its rating without blowing the Amp-trap.

Amp-trap with MOTOR CONTROLLERS



Amp-trap's small "let-through" current (low I^2t) gives positive protection to over current devices and contacts against high thermal or magnetic stress caused by super currents as high as 100,000 amperes R.M.S. at rated voltage. Amp-trap's operating characteristics limit stress on motor controllers, conductors, panel boards and load centers.

Amp-trap with PLUG-IN BUSWAY



Amp-trap's fast "chop-off" on high amperage short-circuit gives short-circuit protection to ordinary fuses and to isolate branch circuits without affecting feeder circuits or other branches supplied from the main busway. Actual tests on high short-circuit current have shown how Amp-trap amplifies plug-in busway momentary ratings by limiting magnetic and thermal stresses, and permits application of designs having limited withstanding ability on high powered installations.

Amp-trap is safe, efficient, economical short-circuit protection for electrical apparatus against large available short-circuit currents.

AMP-TRAP — "Awake At The Switch"

OUR 60 YEAR

In Canada — Powerlite Devices, LTD.

THE CHASE-SHAWMUT CO.

385 MERRIMAC STREET • NEWBURYPORT, MASSACHUSETTS

Amp-trap Tri-onic C-O-T Trionet ONE-O-T FUSE WIRE

Control Devices

(31) Line Material Co., Milwaukee 1, Wis.

New control devices for application to the Kyle type R, three-phase heavy-duty oil circuit recloser include a shunt lockout solenoid, auxiliary switch and shunt or relay trip solenoid. Also available is an instrument control cabinet for use with the type TR three-phase current transformer, necessary when a ground trip solenoid accessory is employed on the type R recloser.

The shunt lockout solenoid permits remote lockout of the recloser and allows the operating handle to be reclosed manually. The lockout solenoid comes in ratings of 120 v, 50 or 60 cycles and 240 v, 50 or 60 cycles; incorporates a special linkage; is factory installed.

The auxiliary switch may be a one-, two- or three-stage unit for remote position indicating and for switching other low-voltage control apparatus used in conjunction with the type R recloser. Rated 115 v, 30 amp or 230 v, 15 amp, the switch is factory installed. It is mounted externally in a weatherproof housing on the recloser head and is connected by mechanical linkage to the recloser mechanism.

The shunt or relay trip solenoid permits use of an existing or special relay circuit to operate the R recloser and to supplement the normal series overcurrent tripping of the unit. This solenoid device may be factory or field installed in place of the ground trip solenoid currently available. It operates on 80 to 130 v, 50 to 60 cycles. After the solenoid has been energized, clearing time of the recloser is four cycles maximum. Reclosing time is two seconds for overcurrent or shunt tripping.

The instrument control cabinet, containing an ammeter, transfer switch and shorting switch, was designed primarily for recloser installations with the ground trip solenoid and the TR current transformer. The cabinet is stamped steel and has a hinged weatherproof door that can be locked. Designed for vertical mounting on a pole or substation frame, the cabinet has multiple conduit knockouts along its bottom.

All line currents can be read by switching phases with the transfer switch. The shorting switch is provided to de-energize the ground trip solenoid. Ammeter scale ranges of 0-200, 0-270, 0-300 or 0-400 amp can be furnished to cover the range of TR transformer ratios and ground trip settings.

Fill in Coupon on Page 56

GARDNER

16 YEARS CONTINUOUS SERVICE

This is the attractive, modern Shell Development Company building in Emeryville, California

★ Special problems are welcome. Our experience is widespread and our production line is flexible. Write for information.

The three 250 KVA GARDNER transformers at the left of this illustration were installed for the Shell Development Company in 1937.

These GARDNER transformers had been in continuous service since that time until a few months ago when they were taken out of service, cleaned and refilled with Shell Diala Oil AX. It is interesting to note that these GARDNER transformers were in operation during the time this organization developed Shell Diala AX.

The four other GARDNER transformers have been added more recently in this vault as Shell Development Company continues to grow.

GARDNER ELECTRIC MANUFACTURING COMPANY

FACTORY AND GENERAL OFFICE

4227 HOLLIS STREET EMERYVILLE (OAKLAND) 8, CALIFORNIA

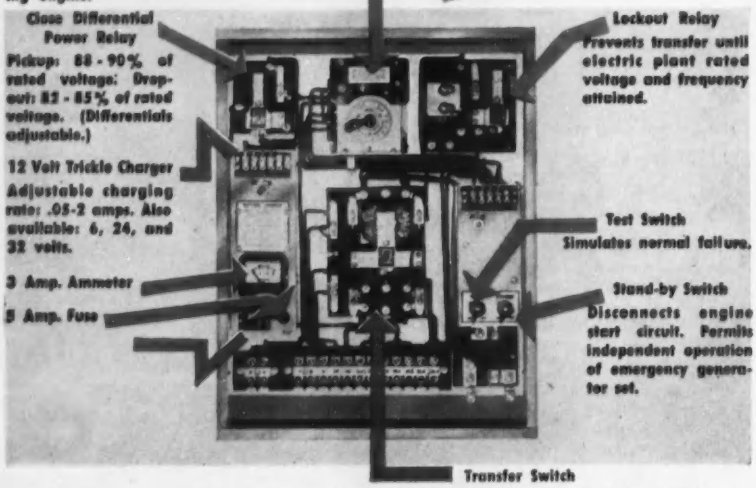
DISTRIBUTED BY: MAYDWELL & HARTZELL, INC.

SEATTLE • SPOKANE • PORTLAND • SAN FRANCISCO • LOS ANGELES • PHOENIX

For Continuous Adequate-Voltage Power Use This ASCO® Automatic Transfer Switch Panel

With **New** or **Existing** Emergency Power Supplies!

Conforming to RETMA Standards


Timer
Provides: 3 - 5 sec. delay on engine starting. 0 - 13 min. adj. delay on restoration to normal. 2 min. delay on stoping engine.
Close Differential Power Relay
Pickup: 88 - 90% of rated voltage. Drop-out: 82 - 85% of rated voltage. (Differentials adjustable.)
12 Volt Trickle Charger
Adjustable charging rate: .05-2 amps. Also available: 6, 24, and 32 volts.
3 Amp. Ammeter
5 Amp. Fuse
Lockout Relay
Prevents transfer until electric plant rated voltage and frequency attained.
Test Switch
Simulates normal failure.
Stand-by Switch
Disconnects engine start circuit. Permits independent operation of emergency generator set.
Transfer Switch

Normal: 115 volts/60 cycle. Emergency: 115 volts/60 cycle. 1 normally open and 1 normally closed auxiliary contacts.

CONTINUOUS POWER! An ASCO Automatic Transfer Switch transfers the load to emergency in 2 to 5 cycles when normal power fails! Once the normal source is in proper operating condition, the load is automatically restored.

ADEQUATE-VOLTAGE POWER! The Close Differential Relay shown, operating with the Transfer Switch, can provide transfer on a 5% differential in power supply voltage (less, if required). This assures adequate voltage for your installation.

This complete panel may be installed with your new emergency power supply, or may be wired into an existing installation. ASCO Automatic Transfer Switches are available up to 1000 amperes, 750 volts, AC or DC.

This Automatic Transfer Switch panel is one of many control systems designed by ASCO Engineers for Microwave installations. ASCO manufactures a complete line of Electromagnetic Controls including Solenoid Valves, Remote Control Switches, Contactors, Relays, and Complete Control Panels.

ASCO Engineers have developed an extensive line of controls not only for microwave power plant installations but for power, communication, instrumentation, marine, machinery, lighting, heating and general industrial fields. Our pamphlet "When Normal Power Fails . . ." describes ASCO Controls in the microwave field.

For information on other ASCO Controls ASK FOR THE COMPLETE ASCO SWITCH CATALOG

ASCO Electro-Magnetic CONTROLS

Be Sure of Continuous Power.

Automatic Switch Co.

385 S. LAKESIDE AVENUE · ORANGE, NEW JERSEY

Dust-Tight Boards

(32) Square D Co., 4335 Valley Blvd., Los Angeles 32, Calif.

Designed for use in hazardous locations, a new line of dust-tight circuit breaker lighting and distribution panelboards prevents entrance of grain dust, carbon black, coal or coke dust and metal dust. The line meets NECode requirements and standards and is Underwriters' approved for Class II, Groups E, F and G hazardous locations.

The panelboard enclosure consists of a formed steel box and front with welded corners. External, dust-tight handle mechanisms operate the branch circuit breakers. A heavy garlock packing is provided between the flanges of the box and the front. It is arranged to seal the opening with the help of heavy swing bolts and clamps. Conduit hubs for main and branch circuit cables are seam-welded to the top or bottom of the enclosure as desired.

These panelboards incorporate the manufacturer's thermal-magnetic, quick-break circuit breakers for a-c and d-c service. Lugs only or main circuit breaker construction are available. Branch circuit breakers are provided in ratings from 15 to 50 amp, single pole, and 15 to 100 amp, two and three pole.

(33) **LABELS** — Its self-adhesive plastic "write on it" tape is now furnished in cut-to-size strips or labels from 1 to 6 in. long and from 5/16 to 3 in. wide, according to Labelon Tape Co. Inc., 450 Atlantic Ave., Rochester 9, N. Y.

For More Data
Fill in Coupon, Page 56

Varied problems?

BUTT OR LAP JOINTS AT ANY ANGLE

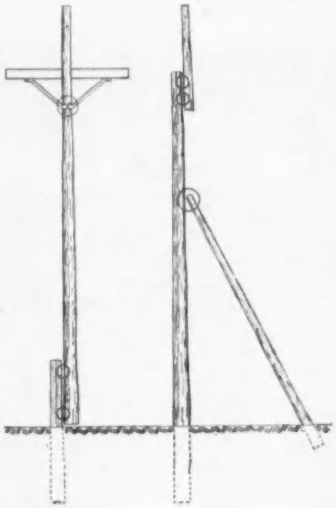
WOOD TO WOOD

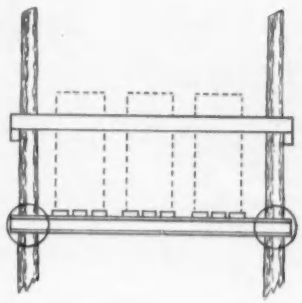
ROUND TO ROUND
ROUND TO DIMENSION
DIMENSION TO DIMENSION

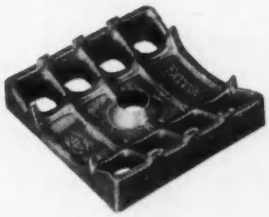
WOOD TO METAL

Versatile answer!

M.I.F. GRID GAINS and TIMBER CONNECTORS







M.I.F. Grid Gains and Timber Connectors are adaptable to dozens of different applications — they make STRONGER, MORE DEPENDABLE CONNECTIONS.

Tests show that shear forces four to five times greater than could be resisted by a single through bolt are attained by using Grid Gains or Timber Connectors.

M.I.F. Grid Gains and Timber Connectors permit fuller utilization of the strength of wood by allowing higher design loads in shear — for both permanent and emergency construction. No special tools required for installation.

We have the story for you in our Bulletin PH10. Write us.

MALLEABLE IRON FITTINGS CO.

Pole Hardware Division **Branford, Connecticut**

N. Y. Office: 30 Church St.

Canadian Mfr. & Dist.: LINE & CABLE ACCESSORIES, Ltd. TORONTO

Representatives: William J. Cottrell Co., Portland, Ore. • James H. Drew Corp., Indianapolis, Ind. • Industrial Engr. & Equip. Corp., Los Angeles, Cal. • JSG Electric Co., Chicago, Ill. • B. H. McColn, Knoxville, Tenn. • E. A. Thornwell, Inc., Atlanta, Georgia • J. P. Voight, Summerville, S. C. • Waltham, DeWitt & Krusi, San Francisco, Calif. • L. G. Wendegats, Kansas City, Mo. • Williams Sales Co., Fort Myers, Fla. • Williamson Sales Co., Shreveport, La. • O. C. Witte Co., Detroit, Mich.

1854 ★ ONE HUNDRED YEARS ★ 1954

Major Developments

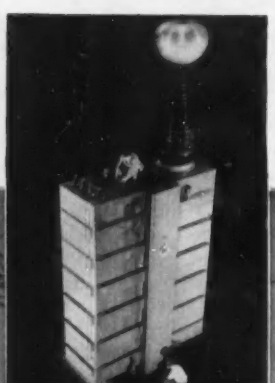
Transformers for TODAY and TOMORROW

TO MEET TODAY'S NEEDS, Allis-Chalmers is building transformers with capacities up to 220,000 kva and others for 345-kv transmission.

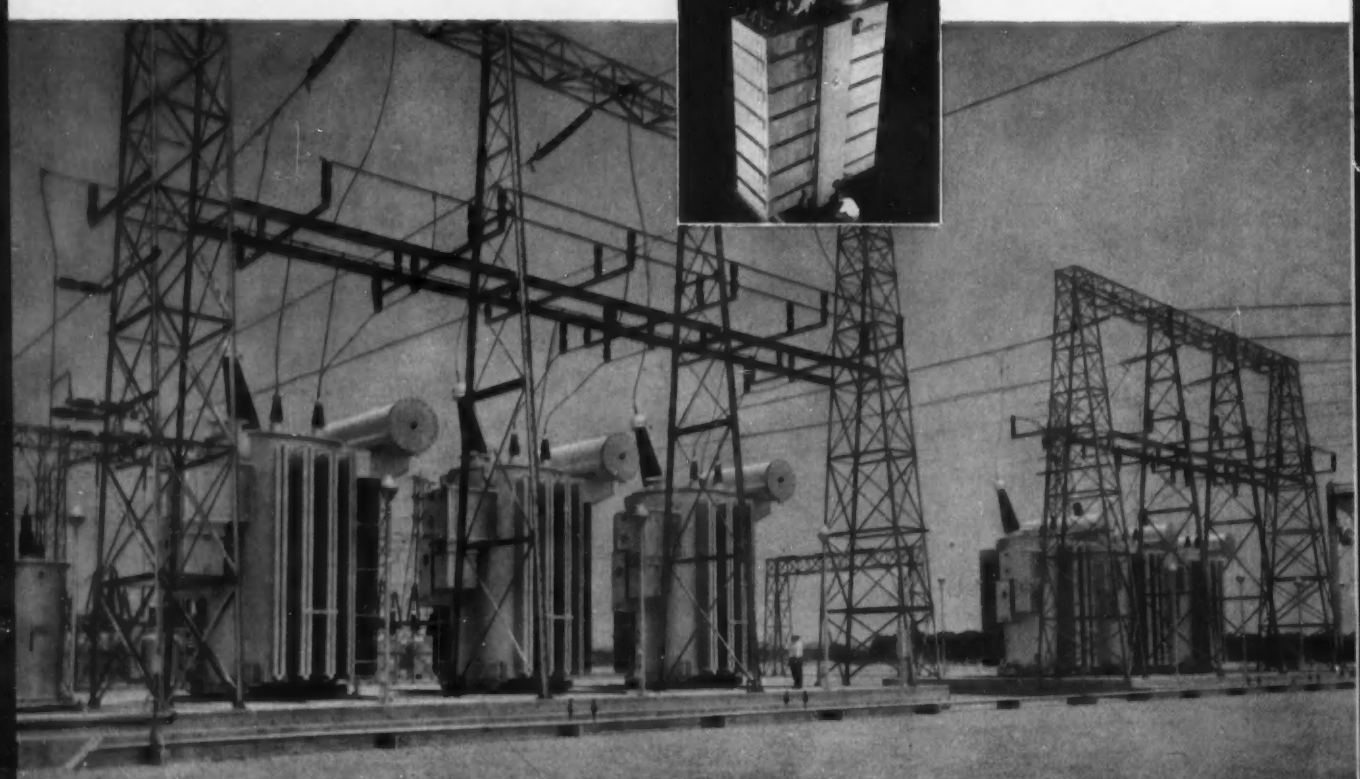
To be ready for tomorrow's requirements, and to add to today's design information, A-C designed and built the 600-kv unit shown below. Tested at design levels and then taken up to breakdown, this pioneering unit has been rebuilt and is now available for testing future extra high voltage power transformers.

This combination of practical experience and development work is your assurance that you can depend on A-C for transformers engineered to meet your requirements . . . all, of course, incorporating *corona-free* design for long, trouble-free insulation life. A-4294

At right: Capable of operation on 600-kv transmission line now — possibly on 880-kv line in the future, this 5000-kva commercial-type power transformer proves that Allis-Chalmers transformer engineering is ready for transmission voltages far beyond present levels.



Below: Two 90,000-kva banks of load ratio control transformers on 230-kv lines of Southern California Edison Company.



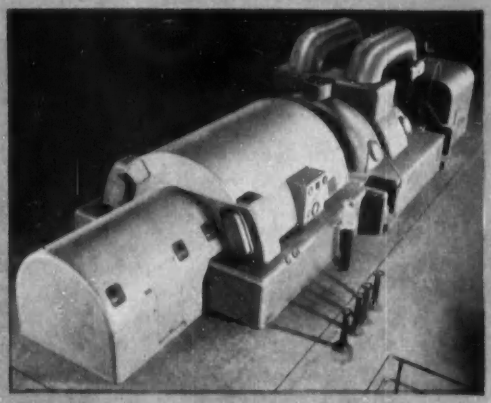
Equipment for Power: Water Conditioning equipment, chemicals and service . . . Steam and Hydraulic Turbines . . . Generators . . . Condensers . . . Steam Jet Air Ejectors . . . Power Plant Pumps and Motors . . . Transformers . . . Circuit Breakers . . . Switchboards and Control . . . Switchgear . . . Unit Substations . . . Utilization equipment.

ALLIS-

in Power Equipment

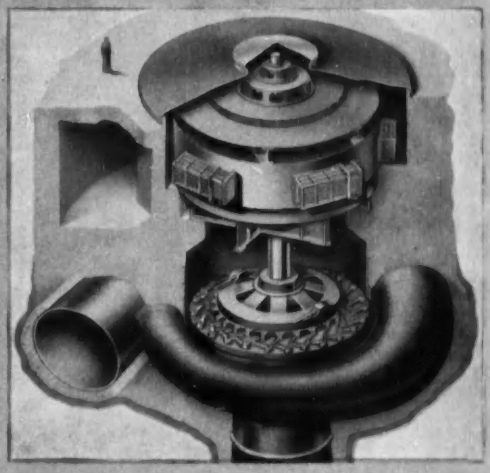
First *Supercharged* Generators

By cutting generator size, supercharged hydrogen cooling permits smaller plant size, lower foundation and crane costs, and smaller breaker and bus structures; now, maximum turbine-generator unit ratings are not limited by mechanical design. A-C turbine generators built for direct rotor conductor cooling have proved themselves in commercial service. The first of these — the world's first supercharged unit — has established a 99.89% availability record during its two full calendar years of operation. And A-C is building a fully supercharged generator affording further economic advantages.



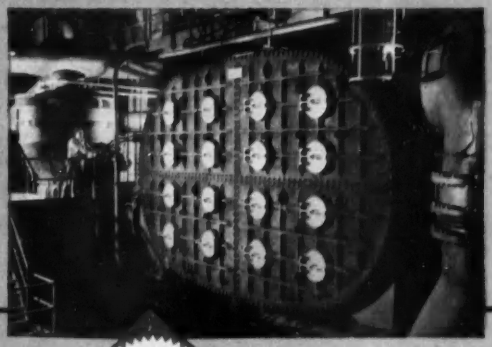
Reversible Pump-Turbine Units

Pioneered by Allis-Chalmers, reversible pump-turbines can solve some troublesome peak load problems. They do this by reducing the amount of equipment formerly needed for pumped storage operation; the single unit operates alternately as a turbine-generator and as a motor-driven pump. One 20,000-hp pump-turbine is now in operation, and four others are in production, with turbine ratings ranging from 12,650 to 120,000 hp. The latter will combine the world's largest motor, with a rating of 102,000 hp, and the largest Francis turbine ever built.



Multi-Steam-Path Condensers

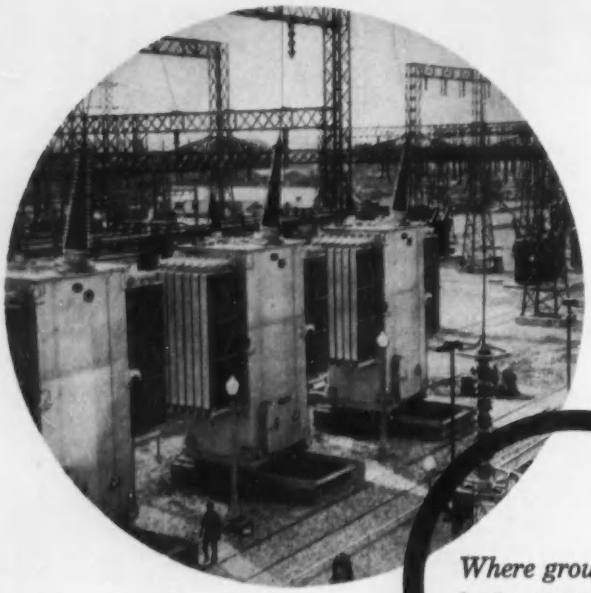
Allis-Chalmers is supplying six 100,000 sq ft surface condensers for the 2,200,000 kw of added private utility capacity being provided for AEC's Ohio diffusion plant. A-C multi-steam-path condensers have consistently helped to cut power costs. With 60 years of experience building over 13,000,000 sq ft of condenser capacity, A-C has the proven engineering and manufacturing facilities to build the largest condensers that might be required.



CHALMERS

A-C ALLIS-CHALMERS

For more information, contact your nearby A-C representative, or write Allis-Chalmers, Milwaukee 1, Wisconsin.



Where ground must be kept **BARE** *of weeds and grasses...*

BORASCU®
WEED KILLER

BORASCU is the answer to your weed problems! Use this weed killer about stations, transformer and yard areas, fence lines, pole yards-lines, and all places where ground should be kept bare of fire-hazardous and unsightly vegetation. BORASCU destroys and prevents regrowth! A single application may keep an area cleared for 1 to 2 years! And this low-cost material is SAFE...nontoxic, nonflammable... won't corrode ferrous metals. Try it!

So Easy to Apply...

NO MIXING...
NO WATER TO HAUL
•
NONPOISONOUS
•
NONCORROSIVE
•

Write for Literature Now! **PACIFIC COAST BORAX CO.**
DIVISION OF BORAX CONSOLIDATED, LIMITED
630 SHATTO PLACE • LOS ANGELES 5, CALIFORNIA

BULLETINS ETC.

(34) LIGHTING CONTROL — Two four-page bulletins on multiple-circuit photoelectric control for outdoor lighting, particularly street lighting, are available from General Electric Co., Schenectady 5, N.Y. GEC-1210 contains detailed technical data. GEA-5141B gives information on outdoor lighting applications for the new equipment. Data on its interchangeability and operational features are included.

(35) CONTROL CENTERS—The Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio, tells advantages of centralized electrical control systems through use of its a-c motor control centers in a 24-page illustrated booklet. Typical installations, specifications, construction details and planning tips are given.

(36) CABLE—A bulletin issued by Rome Cable Corp., Rome, N.Y., contains specifications, physical data and sag and tension data on triplex service drop and secondary cable, both copper and aluminum conductors, and with either Neoprene or Polyethylene insulation. It is listed as bulletin RS-5.

(37) CLAMPS—A 24-page booklet, "Clampways Ideas," giving case histories of unusual uses for hose clamps has been prepared by Punch-Lok Co., 321 N. Justine St., Chicago 7, Ill.

(38) TRANSFORMERS—A new catalog on its line of single-phase Pole Star distribution transformers has been published by Pennsylvania Transformer Co., Box 330, Canonsburg, Pa. It is identified as No. 953. The 28-page booklet is divided into a descriptive section and a technical information section.

(39) STRAIN CLAMPS—A product data folder on installation of its Hi-Lite strain clamps has been prepared by Ohio Brass Co., Mansfield, Ohio. The folder is illustrated with photographs and drawings.

(40) COUNTER—A folder of data on its magnetic impulse counter has been prepared by Kellogg Switchboard & Supply Co., 79 W. Monroe St., Chicago 3, Ill.

(41) BREAKERS—Outdoor service equipment is described in a 12-page bulletin, No. 2016, published by Heinemann Electric Co., 327 Plum St., Trenton 2, N.J.

(42) FIXTURES—Reflector-type lighting fixtures for fluorescent and slimline lamps are described and illustrated in folio R-54 from Gruber Lighting, 125 S. First St., Brooklyn 11, N.Y.

(43) LABELS—W. H. Brady Co., Department 134, 727 W. Glendale Ave., Milwaukee 12, Wis., is offering special marker bulletin 132, listing its self-sticking labels and markers for industry.

(44) HEAT PUMP—It's new all-electric heat pump is described in a four-page bulletin from Westinghouse Air Conditioning Division, Department T-557, 200 Readville St., Hyde Park, Boston 36, Mass.

Fill in Coupon on Page 56

Balance is important in MOTOR STARTERS, too!

Only Square D Balanced Design Gives ALL the Features without sacrificing Any One!

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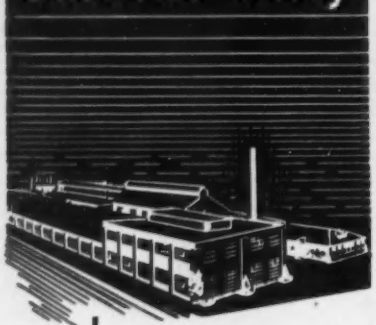

In 1916, the year of our beginning, The Ohio Carbon Company was housed in a small building that had 1100 square feet of space. The success with which our product has met has resulted in a large, well equipped plant covering 50,000 square feet of floor space. We firmly believe that our success has been dependent upon our continuous effort to meet customer requirements promptly and to rendering a helpful engineering and design service. Today, thousands of industrial concerns avail themselves of our product and our recommendations. THEY HAVE LEARNED TO DEPEND ON OUR 37 YEARS OF EXPERIENCE IN PRODUCTION AND RESEARCH IN THE LABORATORY AND IN THE FIELD.

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(45) ELECTRIC HEAT — A 32-page booklet, "101 Ways to Apply Electric Heat," is offered by Edwin L. Wiegand Co., 7540 Thomas Blvd., Pittsburgh 8, Pa. Illustrated case histories show ways to apply metal-sheathed electric heating units in industrial jobs. Physical aspects of installation are shown along with a description of the problem, solution and advantages secured.

(46) LIGHTING—The F. W. Wakefield Brass Co., Vermilion, Ohio, is offering an eight-page bulletin on its ceiling lighting systems.

(47) ELECTRIC EQUIPMENT — A 16-page booklet of equipment for the electronics industry is available from Westinghouse Electric Corp., Box 2099, Pittsburgh 30, Pa.

(48) POLES—Lighting poles for shopping center parking lots are described in a folder prepared by The Union Metal Mfg. Co., Canton 5, Ohio.

(49) GYM LIGHTS—A new line of gymnasium lighting fixtures is described in a folder from Steber Mfg. Co., Broadview, Ill.

(50) CONDENSED CATALOG — Commercial and industrial fluorescent fixtures and industrial incandescent and floodlight units are listed in a catalog offered by Electro Silv-A-King Corp., 2000 W. Fulton St., Chicago 12, Ill.

(51) CONTROLS—Electric controls for water heating systems are described in bulletin F 6167 from Barber-Colman Co., Rockford, Ill.

(52) INSTRUMENTS—Wheelco Instruments Division, Barber-Colman Co., Rockford, Ill., describes its instruments for industrial process control in bulletin F 5633-1.

(53) AREA ILLUMINATION — An eight-page condensed catalog on its commercial and industrial fluorescent fixtures and troffers for area illumination has been prepared by Smithcraft Lighting Division, Chelsea 50, Mass.

(54) DATA BOOK—Columbia Cable & Electric Corp., 255 Chestnut St., Brooklyn 8, N.Y., is offering an eight-page pocket reference book. It contains tables shewing allowable current-carrying capacities of insulated conductors, full load currents of three-phase induction and synchenous-type a-c motors, number of conductors in conduit or tubing. Also included are specifications for the manufacturer's cable, conduit and building wire.

(55) AMPLIDYNE—A two-color 24-page publication, GEA-4053, describes Amplidyne systems, how they operate and where they can be used. It is available from General Electric Co., Schenectady 5, N.Y.

(56) INTERRUPTER DEVICE—A booklet from Delta-Star Electric Division describes its new type QB device in various positions of operation on different types of air switches. The manufacturer is located at 2437 Fulton St., Chicago 11, Ill.

(57) CONTACTORS—Information on its magnetic contactors, including dimensions and weights, is given in bulletin 502 recently released by Federal Electric Products Co., 50 Paris St., Newark 5, N. J. These contactors come in NEMA sizes 00, 0, 1, 2, 3, 4, 5 and 6 up to 600 amp or 400 hp, 600 v a-c for the four standard types of control circuits.

(58) CONNECTORS — A data sheet on its solderless connectors is being offered by Mend-It Sleeve Mfg. Co., 136 Bonita Ave., Piedmont 11, Calif. Originally developed for repairing heating elements, these sleeves have additional uses, the manufacturer points out.

(59) FUSES — Loose-leaf bulletins are being offered by Economy Fuse & Mfg. Co., 2717 Greenview Ave., Chicago, Ill., on its products. Subjects include fuse pullers, clamps for fuse clips, plug fuses, one-time cartridge fuses, mechanical indicating fuses, Fustats, renewable plug fuses and Transpro receptacle and fuse for transformer projection.

KILL TWO BIRDS WITH ONE STONE—Fill out this one coupon and get back valuable information from as many sources as you indicate.

ELECTRICAL WEST
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41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	

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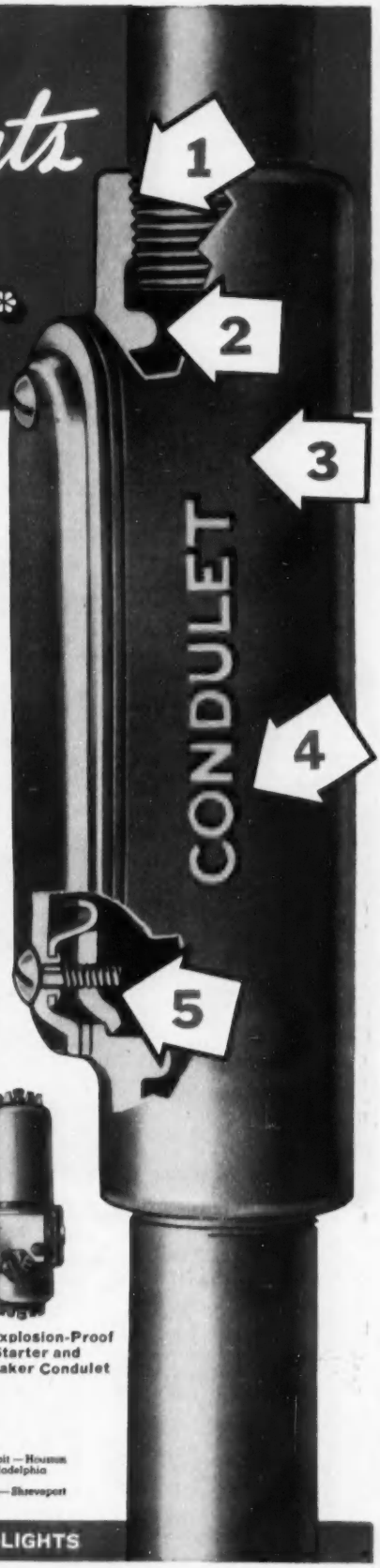
* Please include your company's name and your position, as we cannot ask manufacturers to furnish literature unless you do.

In electrical installations *where QUALITY counts* use CONDULETS*



Quality does count in practically every electrical conduit installation that you make. When you use CONDULETS you know that you are putting in electrical equipment of the highest quality, because CONDULETS have been doubly tested . . . in the factory and in the field.

Crouse-Hinds quality control assures a long-lasting product and field records prove it by the test that only time can give. Thousands of CONDULET installations are still in tip-top condition after twenty, thirty, or even more than forty years of dependable service.

The illustration at the right shows four of Crouse-Hinds' basic quality features that are common to all CONDULETS. The fifth, Wedge Nut Fasteners, is an exclusive Crouse-Hinds feature that has made Obround CONDULETS preferred by electricians everywhere.

1. **Taper tapping.** Condulet threads are taper tapped to match tapered conduit threading. Makes a rigid joint that will not loosen. This assures permanent ground continuity . . . important for safety.
2. **Integral bushing.** A smooth rounded surface protects wire insulation.
3. **Material.** Feraloy . . . a special alloy that is strong and tough, resists corrosion, and gives sharp, full threads
4. **Finish.** A triple treatment provides long-lasting protection . . . exceeds Federal and U. L. specifications.
5. **Wedge Nut cover fastener.** Clear cover opening . . . no projections. No loose parts . . . Wedge Nuts and screws self-retained. No screw holes to align.

More than 15000 items are listed in the Condulet Catalog including a complete explosion-proof and dust-tight line for use in hazardous locations.

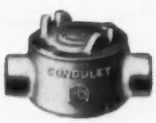
On your next job, use CONDULETS . . . they're made right to last longer.

**CONDULET is a coined word registered in the U. S. Patent Office. It designates a product made only by the Crouse-Hinds Company.*

Type EVA Explosion-Proof Lighting Fixture

Type ARE Arktite Receptacle Equipment

Type FS Condulet With Pilot Lamp Receptacle, Switch and Plug Receptacle



Type GUAC Explosion-Proof Junction Condulet

Type VC Vaportight Industrial Lighting Fixture

Type FLF Explosion-Proof Manual Motor Starting Switch Condulet

Type EPC Explosion-Proof Motor Starter and Circuit Breaker Condulet

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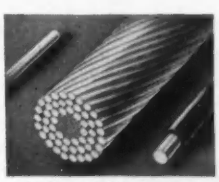
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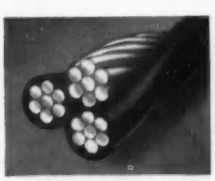
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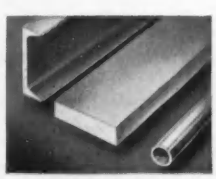
Bus Conductors of All Types

Accessories for All Conductors

ELECTRA'S HUSBAND

IT COULD HAPPEN

"ACTUALLY could there be such a thing as an engineer's strike?" Electra asked in pseudo-innocence one night at dinner. Our guest was an engineering professor who felt keenly about the seeming lack of professional attitude on the part of the majority of engineers. He and I had been heatedly arguing the subject.

"Don't be silly, of course there couldn't," I said quickly, hoping to shut her up, because I could see that she was already bored with our conversation.

"She isn't silly," the university professor spoke up defiantly. "Of course there can be a strike of engineers—right here in the Bay region for that matter. That's the trouble with a lot of idealists like you—you're blind to what's going on around you. You're so busy arguing about what constitutes professional status that you will ultimately let engineering become just another trade."

"But what about a strike?" Electra demanded querulously, sensing the opportunity to provoke the kind of a wrangle that would permit her to shoot a few barbs.

"A strike could be called by a local chapter of the Engineers and Scientists of America," the engineering professor asserted positively. " This is an organization whose avowed goal is to enlist all engineers for the purpose of improving their economic status through collective bargaining. It's primarily an engineer union."

"Yes, but it doesn't amount to anything," I interrupted. "It isn't two years old and few engineers have ever heard of it."

"Will you please shut up and let our guest speak," Electra admonished sternly.

"There you go talking with some of the same abysmal blindness that characterizes so many engineers who refuse to be realistic about the inherent dangers of ESA," the professor resumed impatiently. "The first president of the Engineers and Scientists of America insisted that it was the only national organization whose members engage in collective bargaining with employers that could speak for the 400,000 employed nonsupervisory professional engineers and scientists. By the last public count ESA had 22,000 members and was growing rapidly. The West Coast is one region where great progress has been made in recruiting members."

Electra gave me a wicked smile and said, "You see, I keep telling you that you're not half as smart as you would like me to believe."

"Yes, but you wait until you have me pitted against a college professor before you say that," I muttered testily.

"The two of you sound just like we do at our house except that there are a couple of teen-agers to enliven things," our guest commented.

"Did you know that the ESA proposes to conduct an industry evaluation survey in which it will report on working conditions, salaries, fringe benefits and the like of certain large employers of engineers?" he directed at me. "Did you know that already the ESA is urging the establishment of student chapters in the bigger engineering colleges? It claims to have just as much right to do this as the national professional societies."

"That's something for you university people to worry about," I said defensively.

"Oh no, it isn't," the professor protested. "You and other complacent engineers can't shrug off any of the responsibility for the growth of ESA. It will drag you down to the same level as all of the rest because the profession as a whole is at stake and not just the individual engineer. Suppose through collective bargaining engineers could force an increase in salaries in some places. The less-than-average engineer might benefit but it would be at the expense of his better-than-average fellow engineer. There would be an inevitable leveling off such as follows in the wake of any unionization program."

"Maybe some leveling off is in order," I challenged. "Certainly there is an unfair spread between the starting wage for some of the young wizards you have been graduating during the last three years and the salaries of engineers who have had several years of service. They certainly are underpaid by the standards set in hiring recent graduates. I know cases where the kids get more than engineers who are supposed to supervise and train them."

"Yes, and it's dissatisfied and disgruntled people like that who are easy targets for an organization like ESA," the professor continued. "Industry is responsible for such a situation and ought to recognize the inherent danger in a continuation of the practice. The law of supply and demand should not work solely for the advantage of the newcomers. There should be a comparable increase for engineers already employed. Your utilities and major electrical manufacturers are among the largest employers of engineers. Perhaps they should take a look at their own salary schedules and correct some of the inequities. That surely would discourage any movement to associate with ESA."

"I just can't believe that engineers would even entertain any thought of joining a union," I remarked skeptically. "The two don't go together."

"Wrong again," the professor countered. "A survey was made back in 1946 and less than 5% of the engineers questioned favored unions. Last year the National Society for Professional Engineers made another survey and this time 34% believed that they would be benefited by membership in a collective bargaining organization. That's a big gain in seven years. Unless steps are taken now to forestall the movement or to combat it later, it seems inevitable to me that there will be collective bargaining agencies for engineers. Of course if engineers as a group would demand full and final recognition of engineering as a profession, something might be accomplished."

"Wait a minute," Electra intervened. "I asked you two if engineers would strike and all you've talked about is whether engineers would organize. *I* am striking now — against washing dishes. You two are elected."

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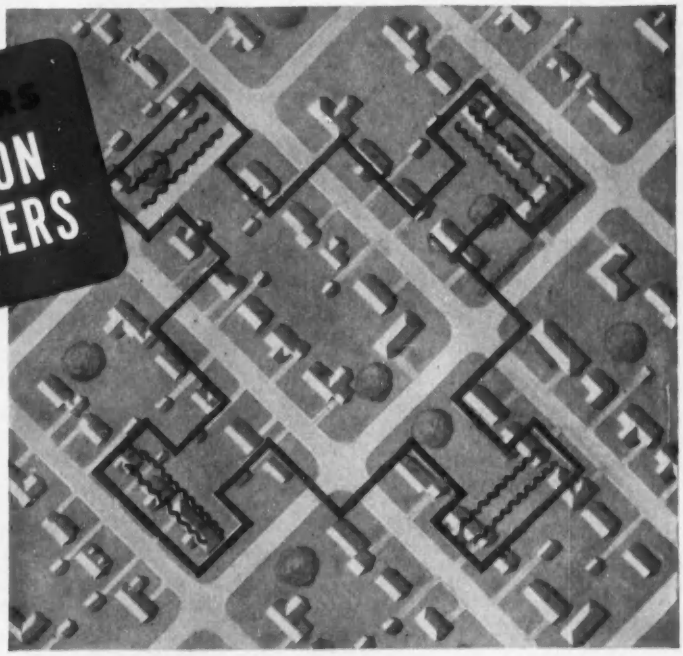

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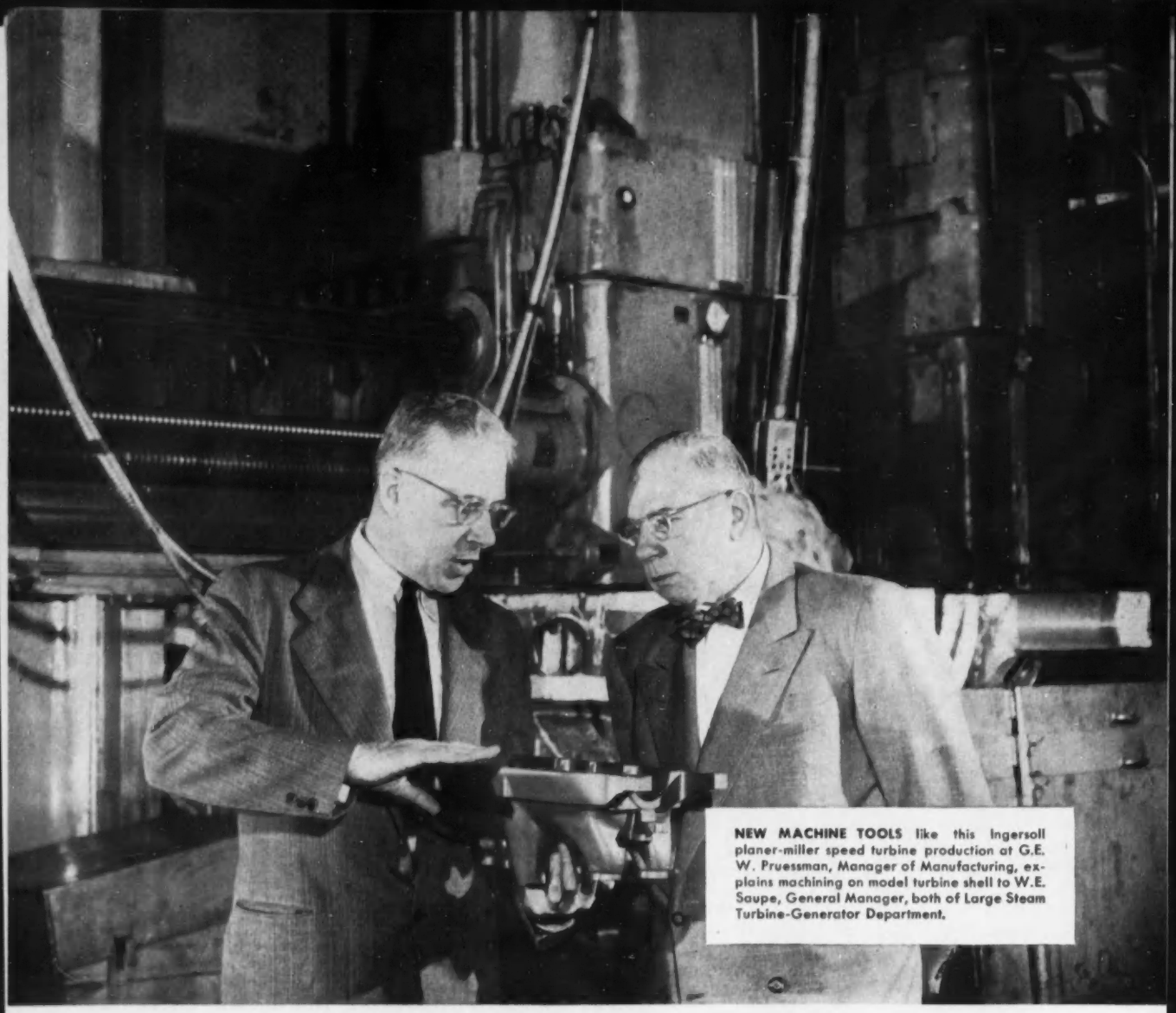


NEW MACHINE TOOLS like this Ingersoll planer-miller speed turbine production at G.E. W. Pruessman, Manager of Manufacturing, explains machining on model turbine shell to W.E. Saupe, General Manager, both of Large Steam Turbine-Generator Department.

G-E turbine output will top 7,000,000 kw in 1954

REHEAT UNITS COMPRISE 92% OF RECORD OUTPUT—AVERAGE SIZE UP TO 119,000 KW TO MEET CONTINUING UTILITY EXPANSION

Pacing the tremendous growth of electric utilities to meet the nation's increasing demands for electric power, General Electric's production of large turbine-generators in 1954 will exceed 7,000,000 kw, a new record that compares with the 6,300,000 kw total for 1953.

NEW DESIGN ADVANCES

Following the trend toward larger units for greater efficiency, the average rating will be about 119,000 kw—almost four times the rating of eight years ago—while more than 92 per cent will be of the reheat type.

Significant advances in turbine-generator design made by G.E. this past year include the engineering and manufacture of a direct, gas-cooled generator rotor, as well as the design of a direct, liquid-cooled generator stator. For greater efficiency, a double reheat turbine has also been designed to operate with steam at supercritical pressure of 4500 psig and initial temperature of 1150 deg. F. This reheat turbine will go into production this year.

FASTER DELIVERY

Experienced personnel, operating new machine tools especially built for G.E., have helped curb rising price trends and made possible faster delivery of turbines. Moreover, the new $3,500,000 turbine product development laboratory, to be completed late this year, is typical of the far-seeing research behind G.E.'s engineering accomplishments that make possible more efficient power generation equipment for the electric utility industry. General Electric Co., Schenectady 5, N. Y. 301-255

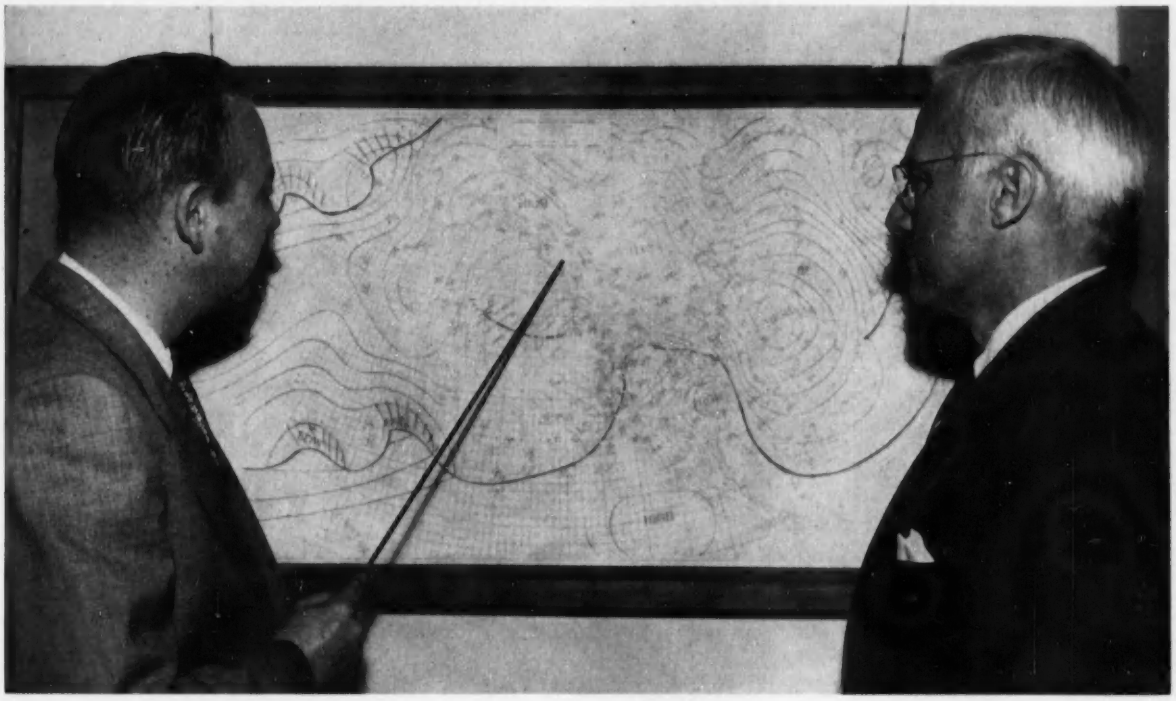
MORE POWER TO AMERICA

GENERAL ELECTRIC

MARCH 1954 Vol. 112, No. 3

ELECTRICAL WEST

SPOKESMAN FOR THE MOST HIGHLY ELECTRIFIED SECTION OF THE U. S.



Large weather map is being used by PG and E Meteorologist Parsons to brief the author on an advance storm that means trouble

Weather Is *Our* Business

Charles Pennypacker Smith

Pacific Gas and Electric Co.
San Francisco

Public utilities should employ their own private meteorologists to supply the specialized weather information needed for their operation. The government should not be encouraged to enter this logical domain of private enterprise. So says Charles Pennypacker Smith, chief gas dispatcher and meteorologist of Pacific Gas and Electric Co. Smith is a nationally prominent meteorologist, having received his training in the graduate school at the California Institute of Technology. In 1938 he started PG and E's private forecasting unit, which is still under his supervision. He also has supervisory responsibility for that utility's three experimental cloud-seeding projects in the high Sierra.

In the past two years the recurrence of drought conditions in the Southwest, Midwest, and eastern parts of the United States has emphasized again the vital importance of weather in our national life.

No industry is more sensitive to the impact of severe or unusual weather than the public utility industry. Overhead lines and outdoor facilities are directly exposed to the hazards of nature. Hydro generation depends on the vagaries of nature's water supply. Power companies rely on the atmosphere to carry off the waste effluent from their steam generating plants. Even customer demands and revenues are affected by the weather.

Since weather is so important to the utility business we might logically expect to find our great industry in the forefront of those who seek to understand and apply the techniques of the science of meteorology to their problems. Unfortunately this is not the case. We are cooperating in limited areas, such as taking climatological observations, making snow surveys, stream gaging, and runoff forecasts. But to a great degree we have depended on agencies of government, especially the U. S. Weather Bureau.

In 1953 the writer was privileged to serve as a member of a civilian committee appointed by Undersecretary of Commerce Murray to study

the operations of the Weather Bureau and to make recommendations. The committee spent several weeks visiting Weather Bureau stations all over the nation, meeting with leading scientists, people from agriculture and business, who are the principal users of Weather Bureau services, and talking with key Weather Bureau people about the problems they encounter.

From this work there emerged a clear pattern of dissatisfaction with present methods, a lack of understanding of what the science can and cannot do, and an unhealthy dependence on the federal government to do the job.

It was shocking to hear representatives of great companies, some from our own industry, ask for more and more service and to find they had never considered the possibility that the work should be done by their own organizations, or by private consulting meteorologists. The utilities who have a tremendous stake in private enterprise should be the last to promote dependence on government agencies, or to encourage the socialization of a profession.

When the construction of a dam in the mountains is planned, while maps and such studies as are available might be obtained from the U. S. Geological Service, we certainly do not expect that agency to do the work for us. Our own engineers study the problems involved and come up with the solutions. In special cases expert consultants in geology or engineering might be employed. But we stand on our own feet. Why should it be any different in meeting our weather problems?

Outage time on important lines is saved by mountain crews being forewarned of storms

Weather Bureau Functions

The U. S. Weather Bureau was originated and remains today essentially a service function of government. Its primary mission is to observe, measure, record and disseminate reports of weather conditions and to warn the public of hazardous storms, cold waves and floods. In recent years it has been charged by Congress with furnishing special services to aviation and for many years it has performed special services for agriculture, in which cases elements of public safety or public welfare are high.

Nine-tenths of the bureau's funds and manpower are employed in taking weather observations, plotting charts and maps of current weather conditions, issuing public forecasts and processing information about the weather in various ways. Only 2.3% of its budget, some $600,000 a year, is available for research to nourish progress in the science. The annual budget of the Weather Bureau, some $27,000,000, costs the citizens of this nation only 18c per capita. This might be compared with 50c per capita in Canada or 47c in the U.S.S.R.

These figures are cited not to indicate that the Weather Bureau should have more money, but to show that it is utterly impossible for the bureau to supply specialized services for industries such as ours. The bureau has all that it can do to maintain the basic observation and communications networks, to fulfill its primary responsibility of storm and flood warnings to the general public and to meet the demands of aviation and agriculture within the funds available.

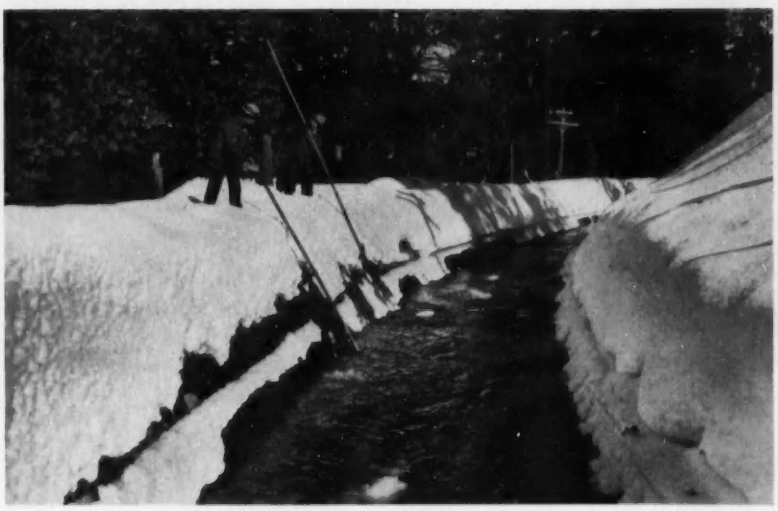
Private Consultants

How then can meteorology serve the utility industry's needs? These needs can be met by developing competent meteorological engineers within the industry and encouraging a strong supporting group of private meteorological consultants. It is essential that these people be intimately conversant with both the scientific aspects of weather and with the special problems of our companies.

Steam plant design engineers cannot be expected to make a geological study with the same competence as a geologist. Substation designers are not expected to handle a rate case. Experience has taught the need of applying specialized skills in technical matters.

The profession of meteorology is a highly technical field, requiring scientific skill and training. It can be put to work to help solve our weather problems, if we give it the opportunity and incentive.

Extra crews are sent to potential storm area on advice of utility's own weather man



U. S. Weather Bureau does not supply specific information needed by a public utility

Here are some of the areas of the utility business in which these skills can serve:

Short-Range Operational Weather Forecasts—Dispatching and other operating personnel require much more than the typical "partly cloudy" or "scattered showers" type of weather forecasts for efficient system operation. We need forecasts designed to apply specifically to our load centers, precise as to time, and as accurate as possible. Wind hazards, areas of heavy icing and snow loading and thunderstorm activity need to be spelled out. In questionable weather situations the forecasts should be weighted in the direction that yields the best system security. It is equally important to have advance warning of impending hazards, and to know when the hazard is past to eliminate manpower stand-by costs.

Long-Range Planning Forecasts—In the regular course of our business we have to make decisions in which the long-term weather outlook is a major factor. Shall we reduce the draft on our reservoirs and pull up steam generation because the past two months have been dry? Can we plan on repairing the foundations of a river crossing a month hence or is there a likelihood of frequent storms? Would it be better to wait another six weeks? We have some work scheduled in a switch yard next week. If we have two or three days of bad weather it will not be done by the weekend, when we must have it in service. What is the outlook?

These are typical questions, which our operating people face day after day. While we all know that forecasts become less accurate as the time is extended into the future, there are, nevertheless, many cases where the risks and possibilities can be evaluated better by a competent meteorologist than by relying on intuitive hunches. The dollar stakes involved in these decisions give us every incentive to encourage the development of such forecasts.

Weather Modification—In the last few years scientific knowledge of the conditions causing precipitation, and how these can be modified, have made great progress. While cloud seeding is still a matter of controversy in scientific circles, there are indications that it may ultimately provide means for reducing the hazard of dry years. In this area too we have every incentive — dollarwise — to participate actively in and encourage scientific experimentation.

Snow Surveys and Runoff Forecasts—Electric companies in the West have been active participants in this field. New techniques, such as aerial photographic surveying and the use of radioactive isotope snow gages, offer interesting possibilities for the improvement of runoff forecasts and for reducing the manpower and costs that are involved.

Atmospheric Pollution—Increased public interest in the "smog" problem, the greater dependence of Western utilities on steam-generated power, and the outlook for a gradual shift in the quality of available fuel oils, all suggest that we will have to take an active interest in this problem. It is a curious fact that most of the advice currently being offered to the public emanates from people who know very little about the basic medium involved—the atmosphere. Meteorological engineering can pay a vital and constructive part in the solution of these problems.

Line Loading Design—The not infrequent occurrence of damaging ice and snow loading conditions in areas and at altitudes not expected in present design criteria suggests that adequate attention has not been given to the meteorological aspects of the problem. This needs careful scrutiny, and possibly the consideration of plant and animal "life zones." It may be that we are underdesigning in some areas and overdesigning in others.

These are only some of the possibilities. The electrical industry has always been alert to the expanding needs of our technical age. We have never hesitated to develop new methods, or to improve on old ones, if we could make a profit and give better service by doing it. We have such an opportunity now, in putting the techniques and skills of the science of meteorology to work for us.

Dry ice carrying balloons are being released in experiments to find a more economical means of cloud seeding than using a plane

Cloud Seeder Gives Balloons a Try

Searching for better ways of cloud seeding, a California power company experiments with balloons carrying dry ice. The method is fast, portable and economical

T. J. Henderson
Chief Hydrographer
California Electric Power Co.
Bishop, Calif.

In the early spring of 1953 it was decided by the California Electric Power Co. to set up some type of experimental cloud seeding project that would supplement its existing dry ice program. The purpose was twofold. First, it was hoped to find a method of injecting dry ice pellets into cumulus-type clouds from some point on the ground. Second, it was hoped this method could be used on seed clouds that might not warrant a regular expensive aircraft flight to high altitudes.

A check was made with the General Electric Co., pioneers in the field of modern weather modification. Raymond Falconer and Vincent Schaefer of the G-E research laboratory in Schenectady had carried on some experiments with meteorological balloons and chunks of dry ice. In these early experiments they had tied dry ice fragments in nylon hair nets and lifted them into the clouds with gas-filled balloons. Their rather limited investigations looked promising.

In the summer months of 1953 the California Electric Power Co. set up an experimental project on the Bishop Creek watershed 15 miles west of Bishop, Calif. Summer clouds in this area were of the cumuliform type and similar to those in the G-E experiments. The equipment required was simple. Several dozen neoprene meteorological balloons of the 100-gram variety were obtained. Portable helium cylinders were used for lifting power. Dry ice slabs completed the main portion of the necessary items. Incidental equipment required was various types of light mesh material, strong cord and indoor facilities for balloon inflation.

Operational Phase

In the operational phase of the project ½ to 1 lb of dry ice pellets ¼ to ¾ in. in diameter were tied in the various types of mesh material. These in turn were tied under and carried aloft by the 100-gram balloons. With the balloons rising at about 1,000 ft

These helium-inflated weather balloons will release dry ice high into cloud formations

per minute, it took only a short time for the dry ice to reach the base of the clouds from the release point located at the 8,500-ft level. Once the balloons are released the ascension rate and direction of flight are, of course, dependent upon the lifting air masses and direction of air flow.

As is well known, the injection of dry ice pellets into a supercooled cloud (i.e., a cloud composed of water droplets with temperatures below freezing) changes some of the water droplets to ice crystals. It is assumed that in the simplest form a chain reaction results from the heat released when water is changed to ice. This spreads the ice crystals throughout the cloud and they continue to grow until they are large enough to overcome gravity and updrafts and finally fall to earth. If the temperature between the cloud base and the ground is below freezing snow results. If this temperature is above freezing rain is the result.

In these experiments a simple method of introducing a larger quantity of dry ice pellets into some specific portion of the cloud also was used. A hole was punched through the bottom of a pint ice cream container and a cord passed through this hole. A circle of cardboard slightly larger than the top of the carton also was punched with a small hole. A third hole was drilled through a small slab of dry ice and the end of the cord was put through this hole and tied around the dry ice slab. The pint carton was filled then with dry ice pellets and inverted after the cardboard circle was brought up flush with the top of the container.

This complete unit was tied to the balloons and released. As the balloons rise the dry ice slab grows smaller until it completely evaporates. The bottom then falls from the pint container and the dry ice is scattered through the cloud. The length of time required for the release of the dry ice pellets may be controlled by the distance of the hole from the edge of the dry ice slab. It was found that with a hole about 1 in. from the edge it would take approximately 20 minutes before the pellets were released. This would then be 15,000 to 20,000 ft above the point of release.

In order to produce action that could be observed from the ground it was found that in some types of clouds it is necessary only to lift the dry ice pellets up through several thousand feet of the formation. In other cloud types it is necessary partially to distribute the dry ice more generally throughout the cloud. In these latter cases it is sometimes necessary to make several balloon ascensions from separated points at the ground level.

Advantages of Project

A few points of significance thus far have come out of the project. First, a great deal has been learned about the unusual wind and cloud conditions existing on the lee side of a titled scarp such as the Sierra Nevada mountain range. Second, it was possible to observe at fairly close range the effect of dry ice injected into the bases of the cumulus-type clouds, which are in a great many cases dangerous for aircraft penetration. From an operational standpoint this method of artificial nucleation makes experiments on various cloud types feasible from an economical standpoint. A great many cloud situations exist that are thought to be rather unsatisfactory for good artificial nucleation results. Experiments can be effected now on these borderline cases without the use of expensive equipment.

Project Has Disadvantage

In some cases where a release is made under a specific location the balloons do not take the dry ice into the intended cloud formation. As a result the absolute control of the ejection point, made possible with aircraft, is not possible with meteorological balloons. However, with proper choice of release points the tremendous lifting of air masses associated with cumuliform clouds usually carries the balloons into the bases of the formations at the chosen spot.

Results

Since the experiments have been carried on for a short time only, it is impossible to say whether or not additional amounts of precipitation were produced over what would have occurred naturally. It can be said, however, that significant changes in cloud structure can be produced through the use of dry ice and meteorological balloons. This method of artificial nucleation may have a good deal of significance in the future when more data are accumulated and results tabulated. It is quick, easy and efficient. At the present time the company intends to continue the experimental project as a supplement to its over-all weather modification program.

Data transmitter for radioactive gage that determines water content of snow is adjusted before telemetering system is calibrated

Radioactive Gages Show Snow Water

Data repeater located on remote mountain top is adjusted and checked and timer is set

A telemetering system that uses radioactive snow gages to bring daily reports of the water content of remote snow packs into a system operator's office is in use in California by the Army Engineers.

The installation is in the Kings River watershed on the west slope of the Sierra Nevada Mountain range. Runoff from the area this spring will be controlled by the corps' new Pine Flat Dam.

The telemetering system will transmit indications of water content in snow pack in two areas to a receiving station above Pine Flat. Signals will be fed into an electronic counter that indicates water content by number of counts per minute.

The technique of using radioactive snow gages and a telemetering system was developed at the corps' Central Sierra Snow Investigation Laboratory at Soda Springs, Calif. Under leadership of Dr. R. W. Gerdel, application was made of Lambert's Law regarding

Radio contact with other crews is maintained by handi-talkie (left). Right: Steel pipe gallows holds radiation counter at gage site

Base station tele-decoder and electronic counter (left). Center: Cobalt gage is calibrated with lead plates. Right: Warning sign

intensity of radiation from a radioactive element passing through an absorbing medium. Water equivalent of snow is expressed in terms of measured attenuation of radiation passing through the snow pack. Readings can be translated into the amount of water in the watershed, which is the desired quantity, and not merely into depth of snow pack in the watershed.

At present, limited information for forecasts is gathered by several methods and pooled by California's Cooperative Snow Surveys. Monthly data are gathered laboriously from established snow courses by men on skis who measure water content of snow pack. Limitation of this method is that it is nearly impossible to get to elevations above 9,000 to 10,000 ft.

Use of snow markers and aerial photography by the California Electric Power Co. and the Southern California Edison Co. is an attempt to overcome this limitation. However, this scheme provides measurement only of depth of snow pack and not of water content.

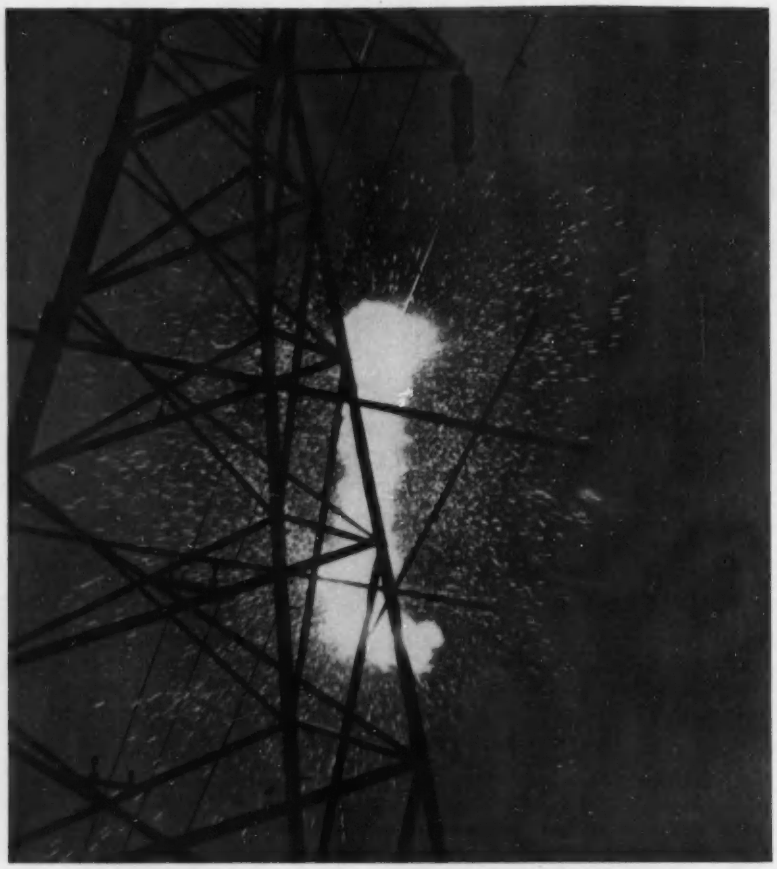
The snow gage consists of a heavy lead tube planted in vertical position flush with the ground. In the lower end of the tube two units (40 millicuries) of cobalt 60 have sufficient strength to penetrate and measure snow depth equivalent of 55 in. of water. The amount of cobalt has a 5.3-year life, which precludes need for correction of readings because of decay during one winter season.

The lead cap that screws onto the lead tube was used to reduce radiations below the danger level while the gage was transported and placed in the ground. In addition, the cap will be screwed over the pipe during summer months to protect animals and humans that may wander into the area. Additional protection is afforded by a sign that warns of radioactivity.

The lead tube directs a stream of gamma rays from the cobalt so that at 15 ft above ground the principle energy is contained within a 1.5-ft circle. Within this area a Geiger-Mueller tube is suspended from a steel-pipe gallows frame. The structure is 18 ft high and 20 ft between uprights to minimize interference to natural settling of snow over the gage.

A G-M tube is used as radiation detector because it has short "dead time," or lapse between responses, requires low operating voltage and is stable and rugged enough for outdoor use. Output of tube is cabled to telecorder, which converts pulse signals into a modulated signal of 8.5 and 10 kc. Signals from the telecorder are fed to data transmitter, which broadcasts the signal to Pine Flat receiving station via Spanish Mountain relay.

Power is supplied by a 900-v dry-cell battery consisting of 20 packs of 45-v units. Radio equipment is powered by wet-cell batteries. Included in the transmitting equipment is a meter panel and timer that controls time and duration of broadcasts.



Simulated flashover on 115-kv line was accurately located by new electronic equipment

Flashover Is Located To the Exact Tower

Flashovers on an *energized* 115-kv transmission line were located to the exact tower in recent field tests. News of an electronic system that would continuously monitor an energized transmission line and indicate fault location with reasonable accuracy, and something that would not be priced out of the market, has long been awaited by utility operators. Through the cooperation of B. A. Currie, engineer of transmission and communication of the Los Angeles Department of Water & Power, facilities and assistance were given the Risco Co. of San Francisco in conducting the first field tests.

After the usual minor bugs in a new piece of equipment were worked out, the system came through with an excellent performance. A number of artificially produced flashovers on the Seal Beach station F 23-mile 115-kv line of the department were located to the exact tower. Accuracy within only plus or minus 1,000 ft, or approximately one tower either way, had been expected by H. N. Kalb of Risco. However, the equipment worked so successfully that the exact tower was indicated.

The city-owned utility had picked towers Nos. 47 and 103 for the simulated faults. The engineering editor of ELECTRICAL WEST was invited to witness the tests and shot the accompanying spectacular headpiece picture on one of the flashovers.

The manner in which a ground was thrown onto one conductor of the 115-kv line to create the flashover was simple and rather ingenious. Four pieces of No. 24 iron wire about 20 ft long were made up with a large battery clip on one end and a 2-lb weight on the other. To the weight was tied a long piece of string. With the line dead, a lineman placed the clips on an armored section of the lower conductor, about three feet apart and out from the insulator string. By means of the string the weight was pulled away from a grounding bar that had been placed on the tower to prevent damage, until the iron wire assumed an angle of about 30°. The string was then tied to a wire fence along the right-of-way, and the line re-energized. Upon mobile radio instruction, the string was cut—the weight fell—and the dynamite-like blast that created the arc pictured. It was most spectacular and the timing necessary to get the picture had to be almost as exact as the electronic equipment that was trying to locate the fault.

Principle of Operation

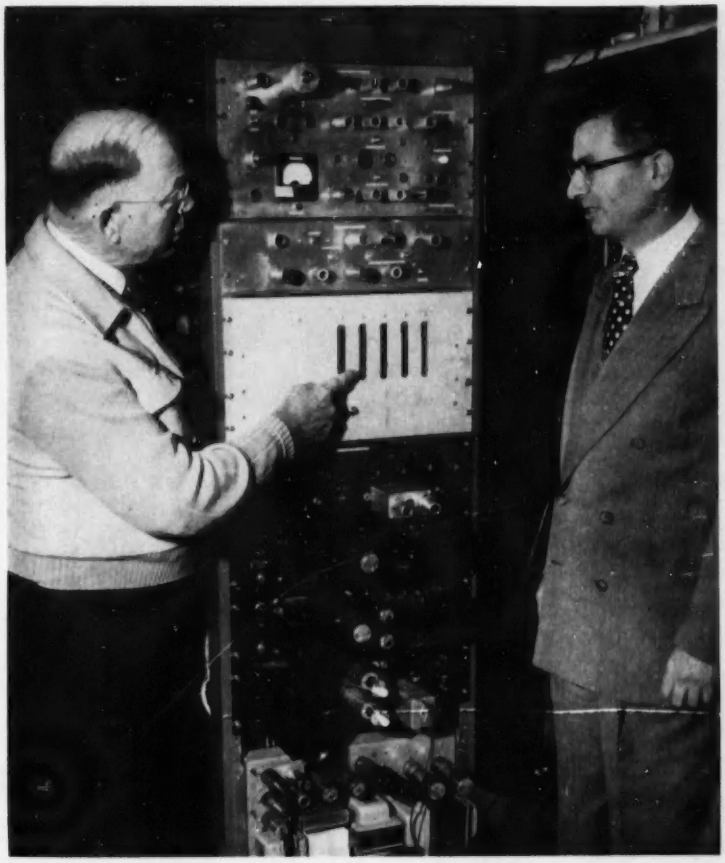
Secret of the fault locator and line monitor is the accurate measuring, in microseconds (millionths of a second) of the difference in time taken by the pulse, created by the fault, to reach each end of the line. It took more than three years of research by Risco's electronic engineers to develop a successful and accurate timer.

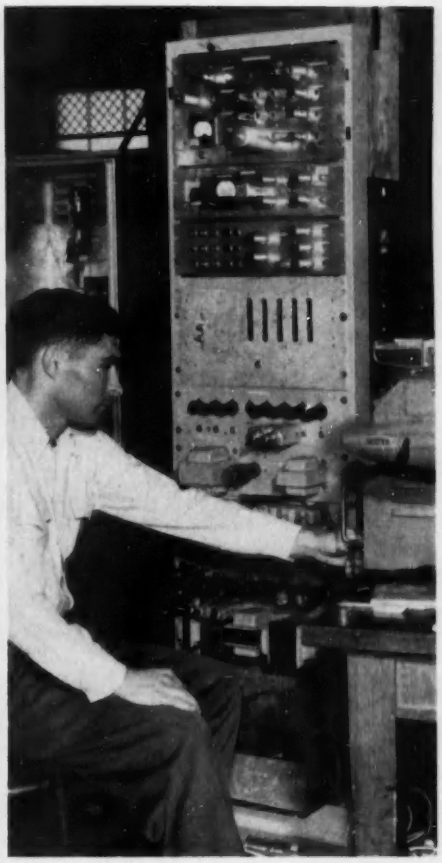
By taking the difference in microseconds between the two readings, and referring to a chart, the fault can be located to within plus or minus the distance traveled by electricity in one mircosecond, or approximately 984 ft. An error of one microsecond was considered tolerable in designing the equipment. This is equivalent to approximately one tower.

Description of Equipment

In general, this Risco equipment consists of a master station at one end of the line and a slave station at the other end. At the master station there is a 100 kc transmitter, a microsecond counter, a 1-mc temperature-controlled crystal oscillator and a fault receiver. At the slave station there is a microsecond counter, a 1-mc temperature-controlled crystal oscillator, a fault receiver, and a 100-kc synchronizing unit.

The equipment is connected to one of the transmission line wires by means of standard high-voltage coupling capacitors. The 100 kc is obtained at the master end by dividing the 1 mc by 10. This is used to drive the transmitter output without modulating the 100 kc. At the slave end this 100 kc is received by a 100-kc narrow-band receiver and is fed into one side of the





Secret of the continuous line monitor is the microsecond counter at center of transmitter at left and the slave station at the right

100-kc synchronizing unit. The other side of this unit receives 100 kc, which has been developed by dividing the slave station 1-mc crystal oscillator output by 10. The synchronizing unit compares these two sources of 100 kc and the difference is fed to a reactance tube that acts upon the 1-mc crystal slave oscillator and thereby brings it into phase and holds it in phase with the 1-mc crystal oscillator at the master station. Now it will be seen that the 1-mc crystals at the two stations are in synchronism and kept that way by the 100-kc tie between the two ends. However, it is well known that it takes a finite time for electrical energy to travel along a conductor. The speed is about 984 ft per microsecond. Therefore, the counter at the slave station will start a definite time after the counter at the master station, and will always be that same count behind, the difference depending upon the length of the line, which is a constant.

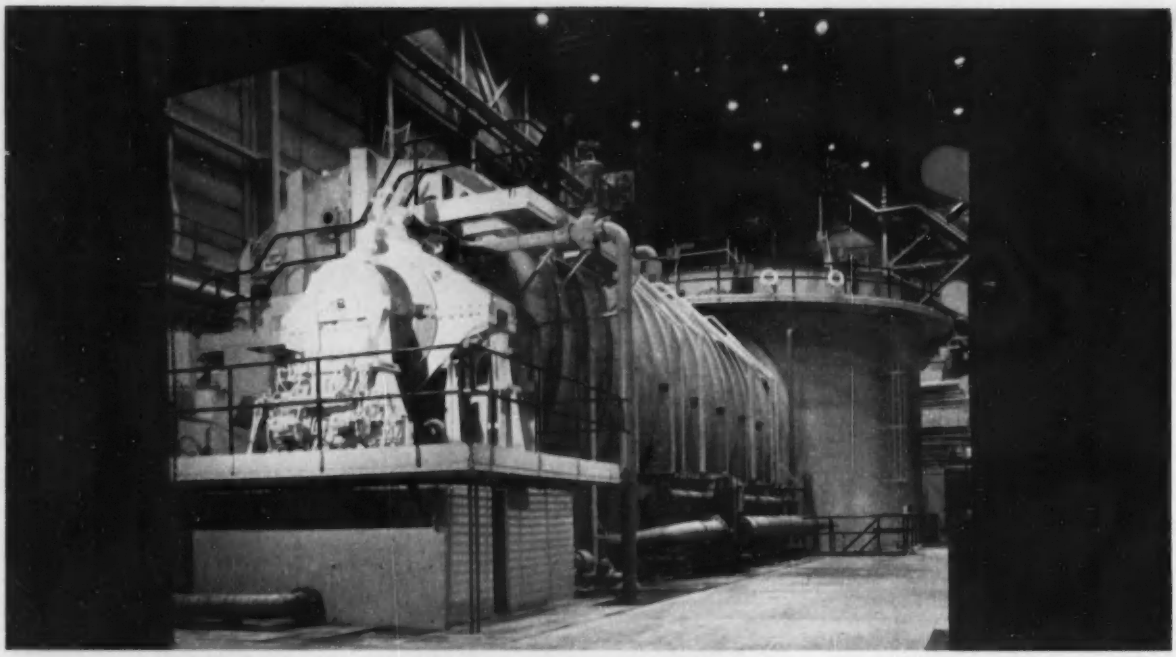
The output of the transmitter at the master station is kept very low for synchronizing. It is about 15% or 20% of normal output. The counters at each end are set on zero and are inactive. When the start button at the master station is pressed, it causes an electronic gate to be opened, thus allowing the 100-kc transmitter to put out the full amplitude of 100 kc. This increase in the 100-kc output is not instantaneous but is a build up. That is, the amplitude of each succeeding cycle increases until full amplitude is reached. The rate of this build up of the 100 kc is controlled by the circuit constants and therefore is fixed. A portion of this 100 kc build-up voltage at the master station is fed into a discriminator, and when a particular amplitude is reached a plus is generated, which starts the counter at the master station. Likewise at the slave station a discriminator in a similar manner starts the slave counter. Now the master and slave counters are both counting at exactly the same rate but with the difference of the travel line in microseconds.

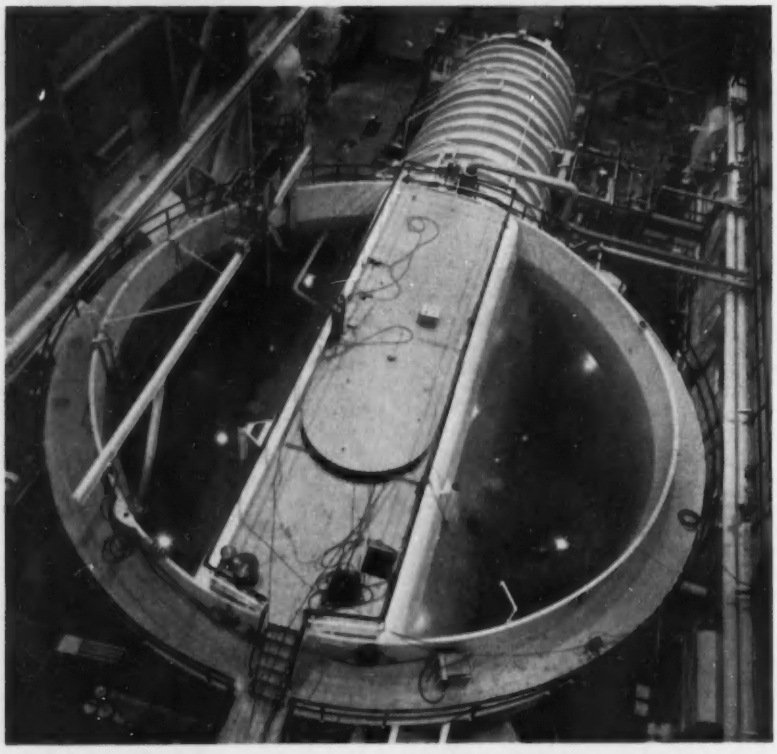
When a flashover occurs on the line, a fault pulse current with a very steep front travels each way from the fault, and at each end is received by the fault receiver, causing each fault receiver to put out a strong pulse, which stops the counters at each end. This gives both a visual and an audible alarm. The operators at each station read the numbers on the counter, give them to the dispatcher who takes the difference in the readings, and refers to a chart that will tell him exactly where the flashover occurred, within ± 1,000 ft. The counters can be started again as soon as the readings have been taken and recorded, so that the equipment is again patrolling the line, ready to record any additional faults.

Patrolling Expensive

In the past it has been necessary to judge from zone relay systems as to that part of the line on which the trouble may have occurred and then patrol the line until the spot has been located. However, these spots may not always be found and consequently when they are supposedly found, it may be an old case of trouble and not the most recent one in question. Also this is a very time-consuming and expensive procedure.

To aid in locating such faults, the Risco equipment described was developed.





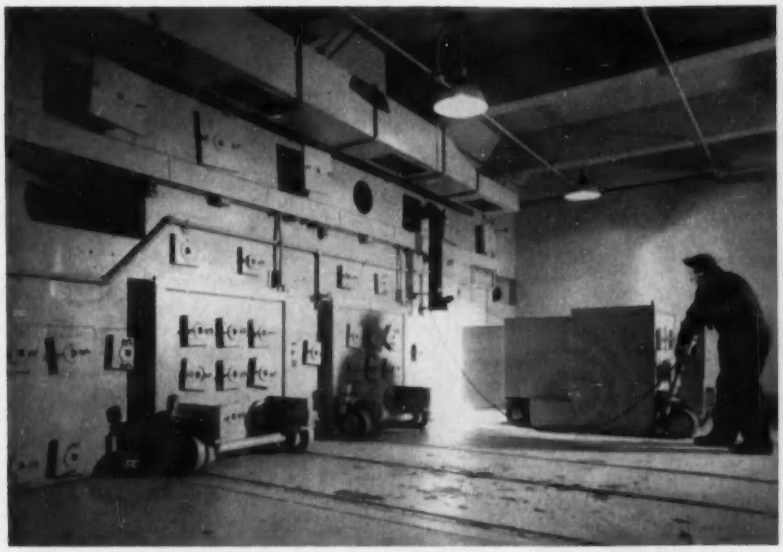
The first atomic submarine engine, contained in the land-based submarine hull shown, was generating power when these pictures were taken. This nuclear power plant, known as Mark I, is a near duplicate of the Mark II that will drive the U.S.S. Nautilus. The large sea tank is about 50 ft in diameter and almost 40 ft high. The hull passes through the tank so that the reactor compartment is located within the tank and completely submerged in water. The tank's water capacity is about 385,000 gal. The picture at the top of the page is a view looking through the largest door of the main assembly building and shows the aft end of the hull and the large sea tank that surrounds the reactor compartment. The picture is a shot downward looking into the sea tank. Both atomic engines, Mark I and Mark II, were built by the Westinghouse Electric Corp.

First Look

Here for the first time engineers can see an atomic-powered steam generator

The accompanying photographs, released by the Atomic Energy Commission, show for the first time what an atomic engine looks like. They were taken at the Argonne National Laboratory in Idaho and show the land-based prototype or experimental model, Mark I, of the nuclear power plant Mark II, that will power the first atomic-powered submarine *U.S.S. Nautilus*. Westinghouse Electric Corp. built the prototype model under contract with the AEC in cooperation with the Argonne laboratory. Westinghouse likewise will build the atomic power plant for the *Nautilus*, launched Jan. 21, 1954.

The atomic engine illustrated is a full-sized power plant installed inside two sections of a submarine hull. The reactor compartment is surrounded by a large sea tank full of water. The second atomic power plant, Mark II, will make the *Nautilus* an around-the-world submarine, capable of cruising submerged great distances at speeds above 20 knots.

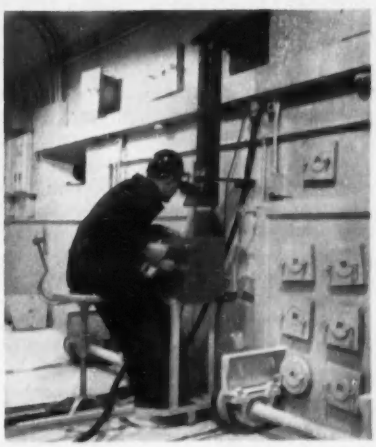


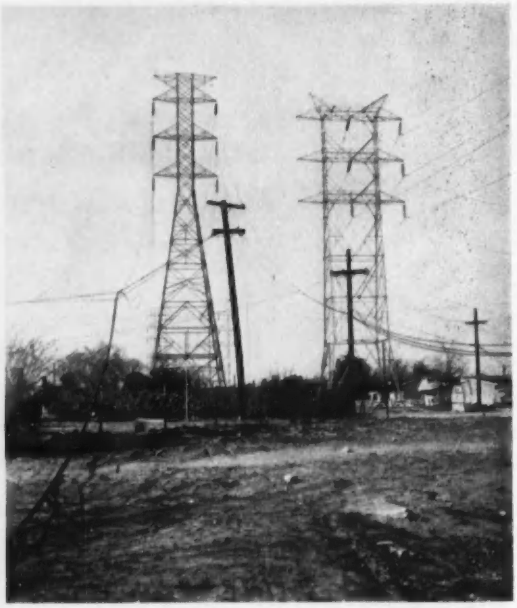
Moving this four-ton door into closed position is no easy task and requires the use of an electric motor to transmit rolling power to the geared wheels. Measuring four feet square at its large end, seven feet through its center the door, or plug, is one of six of equal size through which Westinghouse scientists may enter the hot cell at National Reactor Testing Station in Idaho

at an Atomic Power Plant

"Hot" material is handled with mechanical hands (above). Below: Dismantling radioactive object by remote-control mechanism

Mirror at right has enabled the camera literally to look around the corner into the shielded cell of the AEC test facility and see a radioactive neutron source that is too "hot" to approach. Neutron source is the material used to start the chain reaction in the nuclear reactor of the Mark I power plant. Not visible are the mechanical hands of the general-purpose manipulator being operated by the technician shown at the left





Plane crash destroys house and three garages breaking nine of the 12 conductors on two steel tower high-voltage transmission lines

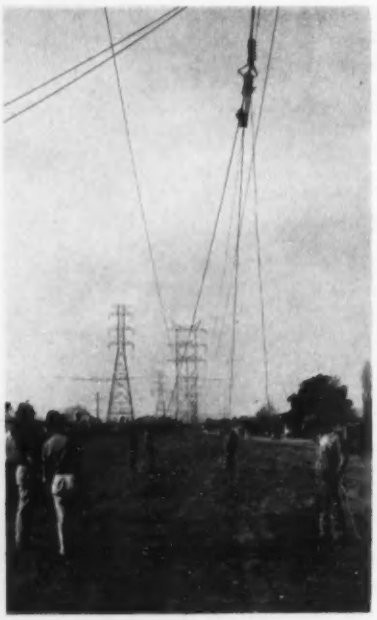
"Quick Pickup" Device Cuts Outage Time

Burton Currie and McDara Keany* Los Angeles Department of Water & Power

Temporary repairs are made quickly on broken transmission line conductors with ingenious mechanical device

A recent airplane accident that took down nine conductors of four 115- and 138-kv transmission lines gave the Los Angeles Department of Water & Power an excellent opportunity to make use of a "quick-pickup" device for making fast and economical repairs of transmission line conductors.

On Sunday morning, Jan. 10, a privately owned converted type A26 bomber flew under the static wires of two tower lines, broke one conductor of the first circuit, two conductors of the second circuit, and all six conductors of the last two circuits, tore down two 34-5-kv circuits, disrupted several distribution circuits, splintered a distribution pole and broke a telephone cable. It then crashed into a house and three garages, finally coming to rest in a garage apartment. Through use of the quick-pickup device, repair of the first transmission line was effected in approximately two and one-half hours after arrival of equipment, with one-half the number of men normally required for an operation of such magnitude.



This shows quick-pickup device in operation with one 954,000-cir-mil ACSR conductor being pulled to temporary position

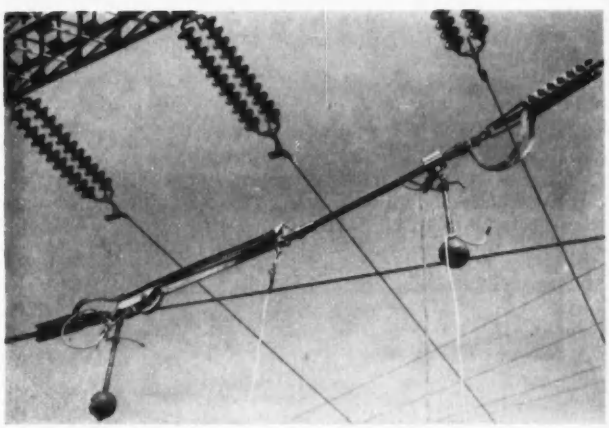
This device is particularly effective when load conditions require speedy restoration of service under adverse weather conditions and when conductors are draped over foreign lines and busy streets. It permits deferment of permanent repairs to lines until more favorable load and working conditions exist.

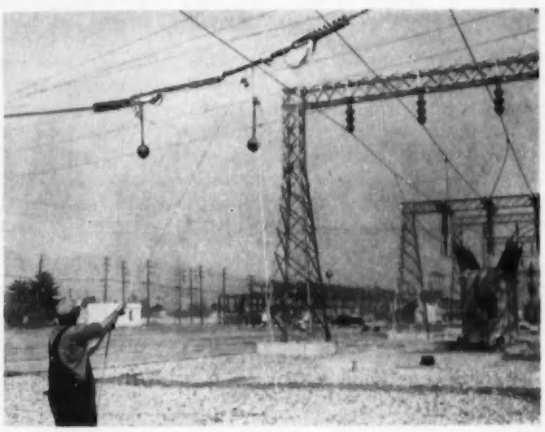
On one occasion a single conductor between suspension towers was repaired in one and one-half hours with a crew of four men. Under similar conditions, without the use of this device, a crew of ten men would have required approximately one full eight-hour day to ready the line for re-energizing.

The device was originally designed and constructed by the department for use on type HH 1.4-in. 512-MCM segmented hollow copper conductors. Later it was adapted for use on 300-

* Engineer of transmission and communication and superintendent of transmission, respectively.

Here the device is shown with its two parts clamped to the ACSR conductor ready for taking up on the pull line to raise the wire





Pull is completed, device is locked, torsion weights and pull line are ready to be dropped (left). Right: Dropping torsion weights

and 500-MCM concentric strand copper and 795-MCM, 954-MCM and 1,113-MCM ACSR conductors.

The device will withstand a tension of 10,000 lb and carry a load current of 450 amp for prolonged periods. As shown in the accompanying photographs, the device consists of a steel frame to which is attached a 2-ft arm with a 30-lb lead ball on the end to counteract torque of the wire under tension, a pulley for ⅝-in. steel winch line, a bronze alloy casting, which serves both as a guide and conductor contact, and a braided copper strip for carrying the current.

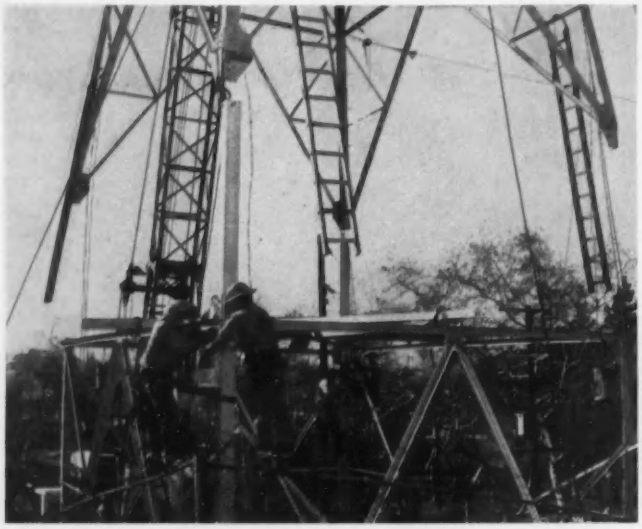
One end of the conductor to be spliced, with "come-along" or dead-end terminal eye attached, is connected to the device by means of a bolt through one end of the steel frame. The winch line passes around the pulley in the device and a separate assembly provides a connection between the winch line and the other end of the conductor to be spliced.

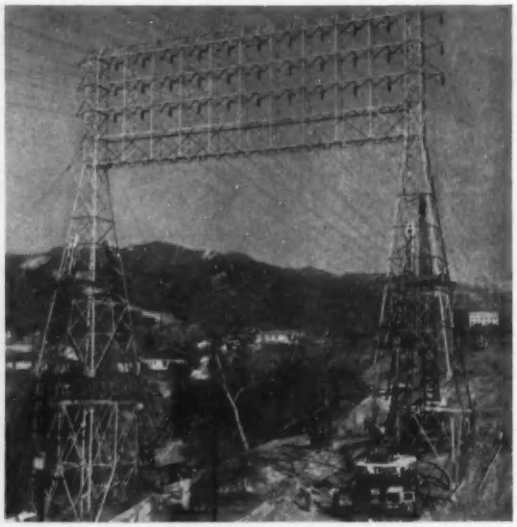
Adapted to ACSR

Since the original design of the quick-pickup device was for type HH conductor, which uses screw-type fittings, it was conveniently adapted without redesign to ACSR by using a short length of type HH conductor, to which is attached a dead-end terminal eye with guide block and a clamp for holding a weighted torque arm. The conductor is attached to this assembly by means of a standard six-bolt Alcoa come-along. For the concentric strand copper and type HH conductors, the dead-end terminal eye with guide block and torque arm clamp are mounted directly on the conductor to be spliced.

In operation, after the conductors being spliced are bolted to the device, ropes are installed on the torque arms and guide block release pins, and the winch cable tightened. As the device and assembly are pulled together, the guide block is drawn into the casting. The block holds the conductor away from the casting until it snaps into position in the frame. Tension is then released and the dead-end terminal eye slips into a recess in the casting. A pull on the rope attached to the guide block pin releases both the rope and the winch line. The torque arms are then released by pulling the ropes attached to their pins. The release ropes are looped over the conductors so that the weights can be lowered without hazard.

This simple, inexpensive device provides an economical and quick method of making emergency repairs to transmission line conductors, particularly under adverse conditions and when system load demands require fastest possible restoration of service.



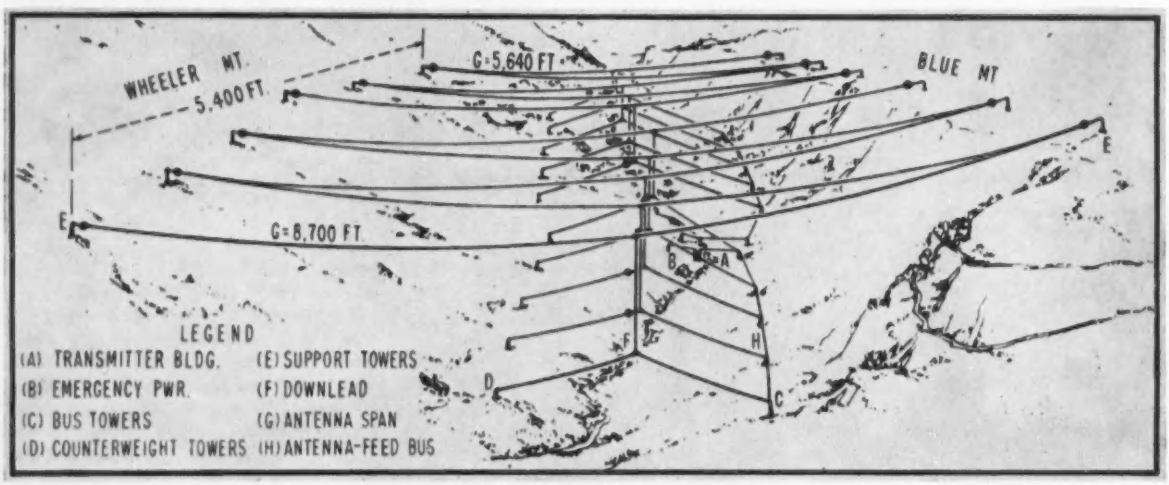


Tower Spliced With Lines Hot

Four extra-heavy-duty mobile cranes recently did an unusual tower lifting job for Southern California Edison Co. It was necessary to raise a 77,000-lb bridge-type transmission tower carrying eleven 66-kv circuits seven feet to provide adequate clearance for the new Colorado freeway at Eagle Rock. To do this job with the high-voltage circuits energized was considered quite a feat.

The tower unit consists of a bridge section 98 ft long, supported by two towers, one 130 ft high and the other 116 ft high. Four of the largest mobile cranes in southern California were used, two on each tower, to raise the two towers simultaneously. Each tower was "broken" in the middle and raised sufficiently to permit crews to bolt on the seven-foot tower extension sections.

C. W. Sanders, superintendent of transmission, Jordan Lummis, transmission engineer, and G. L. Matteucci, central transmission superintendent, engineered the difficult job and directed the day-long operation.



Big Jim Unveiled

The world's most powerful radio station and the largest antenna ever built—that is part of the story of "Big Jim," the Navy's $14,000,000 transmitter near Seattle. The 1,200,000-w transmitter can reach ships anywhere on earth, and it can reach even submerged submarines, says the Navy.

The antenna system shown is the first of its type and the largest ever built, being suspended between mountain ridges to eliminate need for high towers. The antenna consists of 10 catenary spans of cable arranged in zigzag fashion, varying in length from 5,640 to 8,700 ft. To withstand ½ in. radial ice in a 65-mph gale, a 1.01-in. cable spun from 37 strands of No. 7 extra-high-strength Copperweld wire was used. It was essential that these cables have extra high strength, be rust resistant and have high conductivity. About 30 miles of Copperweld cable went into the antenna system.

The station will transmit in the VLF (below 30 kc) range to minimize propagation losses during magnetic storms.

Anticipated harmonic interference with power line carrier systems of Northwest utilities did not materialize.

Here are the proposed

Additions to ASA Transformer Standards

The *proposed* American Standard for transformers, publication C57.12a, issued in March 1952, has been revised and soon will be published as an American Standard, C57.12a–1954. The revised standard represents intensive studies by a subcommittee* consisting of utility and manufacturing representatives. The proposed American Standard was widely accepted and has proved to represent the major needs of users for the rating covered.

Ratings covered were 501 through 10,000 kva, three phase; 501 through 5,000 kva, one phase; 67,000 v and below. These are conventional transformers generally used for step-down purposes.

Some useful additions have been made and it appears that the new standards will meet even more closely the needs of users. Changes are summarized as follows:

Item 1. A 2,000-kva rating has been included for three-phase transformers having low-voltage rating of 2,400 or 2,500 or 4,160Y or 4,360Y. It was found that such a rating was being used widely and that in these particular low-voltage classes a jump from 1,500 kva to 2,500 kva would result in an interrupting capacity requirement on low-voltage breakers that would materially raise the cost of a substation installation.

Item 2. Although provision had been made in the proposed standard for a range of top oil temperature through which the transformer would remain sealed there was no provision for the minimum and maximum temperatures for which the transformer would be suitable. In order to provide for this, the following was added:

"The transformer should be suitable for operation over a range of top liquid temperatures from minus 20 C to plus 95 C, provided the liquid level has been properly adjusted to the indicated 25 C level. (Operation at these temperatures may cause the mechanical pressure bleeder device [see par. 3.1] to function to relieve excessive positive or negative pressures.)"

Item 3. In the proposed American Standard a three-phase transformer shown in Part I had three low-voltage bushings even though the transformer was wye connected on the low-voltage side. Part II did offer an option on a neutral bushing if required. Further investigation showed that in a very high percentage of the cases the neutral bushing was required on wye-connected low-voltage windings and that by placing this neutral bushing in Part II it might be overlooked. In the new standard the three-phase transformers of this type are required with four low-voltage bushings, all of the same voltage class.

Item 4. Probably one of the most important additions has to do with bushings, namely, the establishment of mechanical dimensions for high-voltage bushings in the 25- to 69-kv classes.

Although electrical characteristics had not been fully determined at the time of approval of this standard, it appears that the electrical characteristics for these same bushings will be approved shortly. This particular mechanical and electrical standardization has been sought for many years. Even though modifications in manufacture and usage will be necessary by almost everyone, the end result will be a major reduction in the number of types that have to be manufactured or carried in stock either by manufacturers or users. It has been stated many times that this particular standardization was one impossible of accomplishment.

Item 5. In the proposed standard the 25 C liquid level was stated as being "the distance from the liquid level to a convenient reference point." This is made more specific in the new standard by establishing this dimension as "the distance from the liquid level to highest point of the handhole or manhole flange surface."

Item 6. In connection with the tap changer position, many operators have suggested that there be some uniformity in the way the tap changer positions are numbered or lettered. To accomplish this, the following has been established:

"Tap changer position indicating plate shall be marked with arabic numerals or letters in sequence. The number '1' or letter 'A' shall be assigned to the voltage rating providing the maximum ratio of transformation."

Item 7. A new item is the specification that tanks shall be designed for vacuum filling in the field on all transformers with high-voltage insulation class of 69 kv (350 kv BIL) and on all transformers rated 10,000 kva, any insulation class.

Item 8. In Part II the fan-cooled ratings have been modified to provide a fan-cooled rating for the 2,000-kva size of 2,300 kva. In addition, the fan-cooled rating of a 2,500-kva unit has been raised from the previous figure of 2,875 kva to a new rating of 3,125 kva.

Item 9. In Part II the table showing the range of other high-voltage ratings has been modified slightly. A 25,700 minimum limit for rated voltage in the 34.5-kv class has been established in order to fit the needs of those who require this voltage instead of the 26,400 v previously listed.

Item 10. In Part II there are considerable clarifications made of the available methods of neutral termination of wye-connected windings. This information was not spelled out in detail in the original report.

Item 11. Several additions have been made in terminal board arrangements in Part II to provide for those users who are unable to utilize standard phase displacements.

Item 12. In the original standard alternate ratings for bushings were included through the 69-kv class, including three types of bushings identified as "oversize." Because of the mechanical standardization of bushings that has been accomplished, the use of some of the higher voltage bushings would result in a major change in the transformer cover construction. The alternates have, therefore, been eliminated in such cases but there still remains a table that provides alternate ratings for voltages of 1.2 kv, 5.0 kv, 8.7 kv and 15.0 kv. It is contemplated that the new electrical characteristics will eliminate in all but the most infrequent cases necessity of specifying a higher voltage bushing than would be normally supplied.

Item 13. The original standard did not contain detailed information on nameplates. The new standard contains such information, developed by NEMA as an "Appendix."

The ASA C57 subcommittee on power and distribution transformer standards is now engaged in developing standards for the same group of ratings but with tap changers for operating under excitation or loaded conditions.

* Western members of this committee are: J. H. Vivian, Southern California Edison Co., with C. L. Sidway of the same company as alternate; W. R. Johnson, Pacific Gas and Electric Co. (since resigned). Recently appointed to the subcommittee is C. E. Cannon, Washington Water Power Co.

Let's Look at the Record in 1953

In an engineering business like the electrical industry reliable figures are important. Sometimes they are vital to planning ahead. Always they require concentrated work in compiling.

In the past the figures on customers added or lost, of kilowatt-hour average consumption per residential customer, and of appliances sold in an area have been published in our February statistical and review number. However to do so meant in many cases that the final year-end figures were not yet available and hence estimates had to be made. In repeating these estimated figures the succeeding year for comparison many objected because of their inaccuracy. This year it was decided to wait until the March issue to give time for accurate final figures. Even so the statistics on customers are made available to all several months earlier than obtainable from the Federal Power Commission to which all utilities report.

It was hoped to follow the Federal Power Commission classifications. A difference in wording has been called to our attention and will be remedied next year. However it is assumed that the figures reported here are given very much as they would be for the FPC, although San Diego Gas & Electric has made an adjustment of FPC figures to fit the designations in the table below. Other comments in respect to some of the figures are:

Seattle City Light's figures for 1951 are adjusted to allow for 87,061,336 kwh delivered but not billed when changing from monthly to bimonthly billing in March 1952. California-Pacific Utilities notes an increase of 3,541 kwh per customer since 1945, or 3.78 times 1945 use. The increase in 1953 was 10%, which was less than in previous years. Fourth quarter appliance sales were lowest for the period in five

Customers and Consumption

Utility Territory	Average Annual Kwh, Residential				Residential City		Residential Rural		Agricultural Power	
	1953	1952	1951	1950	1953	1952	1953	1952	1953	1952
Alameda PU Dept.	1,874	1,788	1,757	1,655	13,026††	13,504	...	...	...	...
Arizona PS	2,370	2,262	2,049	1,887	104,540*	99,966*	...	45,891[2]	...	...
B. C. Elec., Vancouver	3,039	2,782	2,550	2,352	126,548	122,438	49,455[2]	8,481	...	...
B. C. Elec., Victoria	2,618	2,388	2,236	2,063	28,803	27,872	8,976	...	...	...
Burbank PS Dept.	1,970	1,925	1,820	1,740	28,230	27,170	...	...	2,123	1,962
Calif. Elec. Power	2,044	2,006	1,831	1,722	60,063*	55,468*	...	...	1,207	1,077
Calif. Oregon Power	7,332	6,738	5,791	5,055	64,725*	62,712*	...	2,574	...	...
Calif.-Pacific Utilities	4,817	4,346	3,687	3,322	21,581	19,569	2,547	208	...	...
Cheyenne LF&P	197.6	194.6	182.8	182	11,403	10,895	234	19,657	2,677	2,578
Coast Counties G&E	2,369	2,282	2,101	1,891	16,436	16,047	20,455	3,957	245	231
Colorado Central Power	2,139	1,919	1,845	1,724	14,177	13,354	4,364	4,910	60[4]	34
Cowlitz County PUD No. 1	7,502	6,440	5,475	4,867	12,557	12,379	4,960	95	...	...
Elko-Lamoille Power	1,779	1,625	1,479	1,407	1,807	1,731	99	...	...	...
El Paso Elec.	2,382	2,185	2,016	1,849	56,771*	52,134*	...	6	1	2
Ely L&P	1,574	1,362	1,207	1,227	1,426	1,369	10	...	...	...
Eugene Water & Elec. Bd.	7,000[4]	6,737	6,330	6,086	18,670*	17,961*	...	...	...	...
Fort Collins L&P Dept.	2,004	1,900	...	...	5,331	5,030	...	1,338	...	...
Frontier Power	1,124	1,059	1,004	946	2,786	2,690	1,392	...	...	...
Glendale PS Dept.	1,875	1,842	1,700	1,616	35,741	34,405	...	...	...	...
Hawaiian Elec.	3,221	3,076	2,867	2,689	71,587*	68,882*	...	...	...	...
Helper L&P Dept.	400	350	300	250	895	895	...	5,349	...	...
Hilo Elec. Light	1,972	2,110	1,925	1,700	5,695	5,636	7,098	2,819	1,123	1,047
Home I&P, Greeley	2,662	2,499	2,437	2,341	7,340	7,089	2,849	...	...	...
Idaho Power	{5,454[15] 5,081	5,306 4,961	4,908 4,620	4,536 4,302	73,493	72,366	... 27,706[3]	27,442 6,240	3,014 946	2,570 904
Imperial Irrig. Dist.	4,500	4,455	3,958	3,682	14,109	12,856	6,010	...	...	...
Lahaina L&P	2,799.6	2,594.2	2,239.5	2,016.3	1,328	1,339	...	...	...	...
Logan City Mun. Elec. Light Dept.	...	...	...	...	4,727	4,807	...	...	...	...
Los Angeles Dept. of W&P	1,865	1,804	1,651	1,631	637,217*	614,493*	...	7,674	...	...
Maui Elec.	2,536	2,412	2,268	2,280[5]	...	...	7,822	11,987	448	453
Modesto Irrig. Dist.	2,980	2,800	2,635	2,540	19,314*	6,479	...	9,422	...	...
Montana Power	2,672	2,519	2,315	2,205	100,398	97,462	9,842	1,131†	...	...
Mountain States Power	4,568	4,343	3,952	3,636	93,129	90,883	1,176†	241,547	63,463	60,682
PG and E	2,749**	2,281**	2,009**	1,943**	956,032	921,526	255,201	25,154	2,380	2,055
Pacific P&L	5,667	5,376	4,983	4,763	101,619	99,894	25,594	...	...	...
Pasadena L&P Dept.	1,871	1,820	1,732	1,645	38,851	38,113	...	...	...	...
Portland GE	6,228	5,966	5,543	5,344	195,079*	190,766*	...	...	...	...
Provo Dept. of Utilities	{1,997 6,773[11]	1,772 6,446	1,695 6,269	1,624 6,219	6,007 1,315	5,836 1,313	... ...	... 15,934	... 115	... 117
PS of Colorado	1,861	1,707	1,627	1,530	186,467	176,791	16,886	...	...	...
PS of N.M., Albuquerque[15]	1,736	1,520	1,402	1,208	...	...	...	...	...	...
PUD No. 1 of Chelan Co., Wash.	5,361	5,182	4,780	4,703	7,012	6,331	3,719	4,000	...	...
PUD No. 1 of Clark Co., Wash.	6,485	6,051	5,647	5,460	...	...	26,280	26,345	176	124
PUD No. 1 of Snohomish Co., Wash.	5,254	4,844	4,352	3,853	41,764*	39,943*	...	...	...	...
Puget Sound P&L	5,203	4,935	4,722	4,777	157,044*	152,714*	...	...	...	...
Raton PS	2,874	2,610	2,300	1,842	2,333	2,332	...	...	...	...
Riverside PU Dept.	2,369	2,399	2,376	2,302	18,291	17,096	...	...	95	94
Sacramento MUD	2,495	2,351	2,193	2,108	92,092*	87,953*	...	...	3,766	3,638
Salt River Power Dist.	3,575	3,545	3,486	3,470	...	...	31,089	26,518	537	504
San Diego G&E	2,294	2,244	2,005	1,878	146,058	134,221	42,851	40,891	4,031	3,863
Seattle Lighting Dept.	6,485	6,312	5,726	5,628	187,234	182,757	...	...	...	...
Sierra Pacific Power	4,073	3,857	3,609	3,419	20,742	19,786	4,500	4,200	...	...
Southern Calif. Edison	1,809	1,758	1,695	1,619	...	...	970,156	906,303	21,367	21,045
Southern Colorado Power	1,882	1,775	1,724	1,654	31,782	30,446	4,486	4,273	485	438
Southern Utah Power	4,016	3,754	3,529	3,104	3,728*	3,502*	...	...	82	81
Tacoma PU Dept.	2,241	2,033	1,799	1,658	50,493	46,610	...	...	...	...
Telluride Power	5,999	5,904	5,602	5,454	6,241	5,789	1,341[11]	1,105	155	153
Tucson G&P	2,209	1,945	1,779	1,628	15,253	13,651	28,997	28,624	315	290
Utah P&L	3,412	3,180	2,925	2,692	164,065*	160,013*	...	...	...	...
Washington Water Power	6,771	6,179	5,800	5,598	90,734	88,043	19,742[7]	19,044	...	...

* Total residential, city and rural.
** Includes master-metered apartments.
† Includes agricultural power.
††Naval housing section of 600 meters converted to one master meter
‡ General commercial and industrial.
§ Large industrial.
[1] Part included in commercial and industrial.
[2] Includes towns in farm areas.
[3] Farm areas.
[4] Estimated.
[5] Includes governmental.

years but heavy Christmas sales took the year totals to 2.4% above 1952.

B. C. Electric explains that its rural customers classification includes at least 60% living in towns and villages within the rural territory. Burbank Public Service Department also noted that last quarter figures in appliances presaged smaller volume in 1954. Riverside Public Utilities attributes the falling off in kwh consumption to connection in the last two months of 1953 of a large number of new tract homes whose occupants had not yet hit their peak in kwh use. Coast Counties Gas & Electric figures on sales do not include those of mail order houses or their branches. The Southern Colorado Power Co. appliance figures are of dealer and company reports from Pueblo alone, no attempt being made this year to estimate that sold in outside towns. The low increase in kwh consumption between 1951 and 1952, it was also explained, resulted from adding two fairly large housing developments, one of which came on toward the end of 1950, another in late 1952, both of which gave a big increase in customers but not in consumption. E. H. Pemberton suggests a fairer way to estimate this growth would be to divide by three the difference between 1950 and 1953.

Pacific Power & Light agricultural power figures, it explains, are for irrigation and included in the commercial classification. Cowlitz County

Estimated Number of Customers by States

State	Total	Residential	Rural	SLP*	LLP†
Arizona	241,917	205,565	853	33,117	1,678
California	4,231,741	3,448,000	147,941	573,000	43,975
Colorado	470,015	378,501	25,099	56,149	8,423
Idaho	207,208	170,306	8,429	27,561	406
Montana	199,142	171,020	...	25,047	2,486
Nevada	63,002	51,492	...	11,298	92
New Mexico	196,001	164,436	3,554	26,536	870
Oregon	553,964	463,438	12,373	74,199	1,704
Utah	218,754	195,873	113	20,063	2,025
Washington	839,718	711,838	25,892	96,048	3,666
Wyoming	94,363	78,655	1,409	12,550	1,512

Source: Edison Electric Institute. * Small light and power. † Large light and power.

Customers and Consumption

Commercial 1953	Commercial 1952	Industrial 1953	Industrial 1952	Governmental 1953	Governmental 1952	Miscellaneous 1953	Miscellaneous 1952	Total 1953	Total 1952	Utility Territory
1,292	1,311	349	354	137	140	...	...	14,804	15,309	Alameda PU Dept.
19,367	18,737	1,377	1,330	306	257	7	6	125,597	120,296	Arizona PS
28,628	26,954	4,124	3,975	...	...	...	...	208,755	199,258	B. C. Elec., Vancouver
5,824	5,478	601	593	...	...	6	4	44,210	42,428	B. C. Elec., Victoria
3,968	3,665	19	19	...	...	...	...	32,217	30,854	Burbank PS Dept.
10,190	9,782	260	284	14	13	121	99	72,771	67,608	Calif. Elec. Power
13,065	12,636	381	350	146	130	...	...	79,524	76,905	Calif. Oregon Power
4,565	4,466	20	21	69	72	1	...	28,783	26,702	Calif.-Pacific Utilities
1,672	1,588	6	6	...	...	...	...	13,315	12,697	Cheyenne LP&P
5,725	5,851	488	490	...	...	60	58	45,841	44,681	Coast Counties G&E
1,961	1,929	38	35	170	155	5	6	20,960	19,667	Colorado Central Power
2,122	2,205	8	8	11	10	2	3	19,720	19,549	Cowlitz County PUD No. 1
511	579	...	...	...	...	...	...	2,417	2,405	Elko-Lamoille Power
7,748	7,602	195	190	...	...	504	505	65,218	60,431	El Paso Elec.
472	449	...	...	7	7	...	...	1,916	1,833	Ely L&P
2,648	2,553	723	721	...	...	...	...	22,401	21,235	Eugene Water & Elec. Bd.
720	...	52	...	64	...	359	...	6,526	6,144	Fort Collins L&P Dept.
480	474	238	237	...	...	10	11	4,906	4,750	Frontier Power
5,239	5,106	...	...	...	...	...	...	40,980	39,511	Glendale PS Dept.
14,713	14,564	167	163	...	...	153	129	86,620	83,738	Hawaiian Elec.
200	200	...	...	...	...	...	...	1,095	1,095	Helper L&P Dept.
2,730	2,470	280	279	...	...	...	...	15,793	13,728	Hilo Elec. Light
2,384	2,331	12	11	10	10	...	...	13,718	13,307	Home L&P, Greeley
14,817	14,506	96	87	135	135	...	...	119,201	117,106	Idaho Power
4,420	4,246	844	868	155	145	165	149	26,650	25,418	Imperial Irrig. Dist.
182	178	...	...	1	1	2	2	1,513	1,520	Lahaina L&P
619	626	...	...	...	...	...	...	5,346	5,433	Logan City Mun. Elec. Light Dept.
18,337[5]	116,381[5]	8,742	8,393	...	...	1,788	1,732	766,084	741,007	Los Angeles Dept. of W&P
1,646	1,664	4	4	147	133	25	26	9,644	9,501	Maui Elec.
2,375	2,278	777	783	131	126	2	2	23,047	22,108	Modesto Irrig. Dist.
16,281	15,921	2,269	2,288	388	336	170	165	129,348	125,594	Montana Power
14,494	13,981	2,541†	3,052†	506	504	6	6	111,852	109,557	Mountain States Power
201,564	198,303	36,302	36,510	27	26	853	731	1,513,442	1,459,325	PG and E
22,440	22,009	1,172	1,180	327	304	5	5	151,157	148,546	Pacific P&L
6,109	5,979	...	...	...	...	...	...	44,960	44,092	Pasadena L&P Dept.
25,166‡	24,801‡	74§	69§	1,298[1]	1,230[1]	1	1	221,618	216,867	Portland GE
837	806	129	134	...	...	219	170	8,507	8,259	Provo Dept. of Utilities
26,789	26,389	6,962	6,907	1,062	993	11	14	238,292	227,145	PS of Colorado
...	...	...	...	...	...	...	...	61,962	61,715	PS of N.M., Albuquerque[16]
1,060	1,090	314	300	14	14	4	4	12,123	11,739	PUD No. 1 of Chelan Co., Wash.
2,604	2,588	8	7	108	105	3	3	29,179	29,172	PUD No. 1 of Clark Co., Wash.
4,246	4,071	112	92	...	...	40	27	46,162	44,133	PUD No. 1 of Snohomish Co., Wash.
16,101	15,513	341	486	...	...	284	278	173,771	168,991	Puget Sound P&L
370	409	278	279	1	1	1	1	2,983	3,022	Raton PS
1,858	1,787	644	622	...	...	91	74	20,979	19,673	Riverside PU Dept.
13,046‡	12,684‡	...	...	...	...	85	81	108,989	104,356	Sacramento MUD
2,608	2,197	250	240	97	133	63	70	34,644	29,662	Salt River Power Dist.
32,527	30,896	565	491	25[10]	23	247	239	226,304	210,624	San Diego G&E
25,245	24,961	266	721	1,213	1,070	25	27	213,983	209,356	Seattle Lighting Dept.
4,319	4,089	88	85	...	...	36	39	29,685	28,199	Sierra Pacific Power
127,084	121,779	26,612	25,636	9,268	8,911[7]	2	2[8]	1,154,481	1,083,684	Southern Calif. Edison
5,451	5,421	85	85	6[9]	6[9]	379	363	41,926	40,302	Southern Colorado Power
658	677	37	34	...	...	37	36	4,542	4,330	Southern Utah Power
5,678	5,664	1,246	1,247	24[12]	23	28[13]	24	57,469	56,568	Tacoma PU Dept.
718	718	25	22	279	243	13	17	8,772	8,110	Telluride Power
7,865	7,418	79	68	5	5	...	...	52,515	50,056	Tucson G&P
17,519	17,001	2,435	2,570	453	425	37	36	184,509	180,045	Utah P&L
13,598	13,305	703	655	213	194	24	24	125,014	121,265	Washington Water Power

[4] 2,700 consumers in plantation camps added to system in 1950, reducing average of 2,544 kwh in 1949.
[7] Other public authorities.
[8] Railways.
[9] Except postoffices, etc.
[10] Does not include federal housing.
[11] As of June 30, 1953.
[12] Wholesale power to public authorities and sales to PUDs and Cooperatives for resale.
[13] Municipal sales and street lighting.
[14] Residential combination.
[15] Domestic.
[16] Includes Belen, Deming, Las Vegas, Santa Fe.

PUD No. 1 further adds that 765 complete electric home heating systems were added to its lines in 1953 and that some 1,000 portable 110-v electric heaters were sold. Its dealer sales figures are weighted from those actually reported by dealers to reflect the average volume from those who did not report. It also makes an interesting breakdown (space for it not available in this issue) of two-, three-wire services, adding heating, commercial, new range and water heater, changes to three-wire for these and for heat and irrigation, single- and three-phase additions.

Southern Nevada Power Co. at Las Vegas was unable to furnish figures in time. It has had the highest kwh consumption per domestic customer in the nation for years because of heavy use of electric heating. Palo Alto City likewise was unable to get figures ready because of illness of statistician.

With the power shortage in the West alleviated by new capacity added there is a resurgence of commercial activity on the part of all utilities. Among the activities restored in many places for the first time since prewar

Appliance Sales

	Domestic Customers	Refrigerators	Ranges	Water Heaters	Freezers	CLM Lamp Sales	Room Conditioners	Washers—Automatic	Washers—Conventional
ARIZONA									
Arizona PS	104,540	11,512	1,854	1,063	2,501	17,514	1,785	5,610	5,073
Salt River Power Dist.	31,089	700	300	225	400	400	300	350	200
Tucson G&P	44,250	....	....	....	....	....	....	....	....
BRITISH COLUMBIA									
B. C. Elec., Vancouver	176,003	23,954	8,782	6,281* 1,228**	3,640	....	....	2,515	10,039
B. C. Elec., Victoria	37,779	4,362	1,461	504	1,318	....	95‡	602	623
CALIFORNIA									
Alameda PU Dept.	13,026	210	290	9	125	....	....	15	75
Burbank PS Dept.	28,230	360	185	20	35	....	135	380	140
Calif. Elec. Power	60,063	3,332	775	375	527	....	600	2,100	1,600
Calif.-Pacific Utilities	24,128	1,477	1,419	928	656	....	120	900	1,200
Coast Counties G&E	36,891	1,854	679	352	424	....	....	1,444	948
Glendale PS Dept.	35,741	....	8,730	942	....	....	....	....	....
Imperial Irrig. Dist.	20,119	1,800	500	150	350	....	2,500	1,100	1,100
Los Angeles Dept. of W&P	637,217	57,200	4,000	2,100	19,800	....	750	35,300	....
Modesto Irrig. Dist.	19,314	....	....	....	....	....	....	....	....
PG and E	1,211,233	69,001	18,535	5,590	17,074	....	10,603	59,960	25,215
Pasadena L&P Dept.	38,851	....	533	80	....	....	....	....	....
Riverside PU Dept.	18,291	....	439	44	....	....	....	....	....
Sacramento MUD	92,092	7,710	3,076	629	2,919	....	1,941	7,522	3,407
San Diego G&E	188,909	20,100	3,000	2,360	7,200	....	....	15,950	9,175
Southern Calif. Edison	970,156	....	....	....	....	....	....	....	....
COLORADO									
Colorado Central Power	18,541	450	400	....	150	....	....	350	....
Fort Collins L&P Dept.	5,331	....	....	....	....	....	....	....	....
Frontier Power	4,178	427	67	110	67	....	7	111	140
Home L&P, Greeley	10,189	570	405	70	90	....	....	405	42
PS of Colorado	203,353	....	....	....	....	....	....	....	....
Southern Colorado Power	36,268	1,940	459	123	884	485	54	864	1,088
HAWAII									
Hawaiian Elec.	71,587	....	35,000	27,000	6,000	....	....	25,000	35,000
Hilo Elec. Light	12,793	763	525	375	366	....	....	278	348
Lahaina L&P	1,328	....	....	....	....	....	....	....	....
Maui Elec.	7,822	400	450	325	120	....	20	190	115
IDAHO									
Idaho Power	101,139	8,000	7,500	6,000	3,000	1,000	300	4,000	2,500
MONTANA									
Montana Power	110,240	7,250	5,500	1,500	3,000	....	100	5,300	5,300
NEVADA									
Elko-Lamoille Power	1,906	....	....	....	....	....	....	....	....
Ely L&P	1,436	....	....	....	....	....	....	....	....
Sierra Pacific Power	25,242	1,967	816	645	519	....	23	....	....
NEW MEXICO									
PS of N. M., Albuquerque§	61,962§	3,994	1,322	109	903	....	....	4,056§	....
Raton PS	2,333	....	....	....	....	....	....	....	....
OREGON									
Calif. Oregon Power	64,725	3,028	2,789	1,892	2,024	....	....	2,733	1,560
Eugene Water & Elec. Bd.	18,670	....	....	....	....	....	....	....	....
Mountain States Power	94,305	....	....	....	....	....	....	....	....
Pacific P&L	127,213	14,861	15,674	7,882	7,549	....	....	15,612	7,554
Portland GE	195,079	....	....	....	....	....	....	....	....
TEXAS									
El Paso Elec.	56,771	6,848	1,653	1,345	1,323	....	....	....	....
UTAH									
Helper L&P Dept.	895	20	20	15	15	....	10	20	10
Logan Mun. Elec. Light Dept.	4,727	....	....	....	....	....	....	....	....
Provo Dept. of Utilities	7,322	595	381	130	284	....	87	621	404
Southern Utah Power	3,728	....	....	....	....	....	....	....	....
Telluride Power	7,582†	188	364	387	262	....	....	....	....
Utah P&L	164,065	9,889	8,277	4,234	4,829	....	....	7,412	6,353
WASHINGTON									
Chelan County PUD No. 1	10,731	379	408	237	156	....	6	214	186
Clark County PUD No. 1	26,280	500	700	400	1,000	....	10	800	200
Cowlitz County PUD No. 1	17,517	1,000	1,200	1,000	300	....	5	1,200	500
Puget Sound P&L	157,044	....	....	....	....	....	....	....	....
Seattle Lighting Dept.	187,234	16,000	14,000	9,000	....	....	250	22,000	....
Snohomish County PUD No. 1	41,764	3,000	3,000	3,000	500	....	10	1,500	500
Tacoma Dept. of PU	50,493	....	2,062	2,064	....	....	....	....	....
Washington Water Power	110,476	7,736	8,332	5,281	3,719	....	637	5,930	4,518
WYOMING									
Cheyenne LF&P	11,637	2,350	410	194	275	300	47	405	1,250

* Automatic storage.
** Other electric water heaters.
† TV station opened Dec. 16, 1953.
‡ Fans.
§ For Pueblo only.
‖ Through Hawaiian Electric Supply Co.

days is that of obtaining reports from dealers or distributors of appliance sales. These serve as a measure of dealer activity in selling and public acceptance of appliances. They also indicate the type of load and thus enable executives to plan to put emphasis on more desirable kinds of load to balance existing peaks or demands. On the types of utilization equipment that offer off-peak compensation sales and promotional campaigns can be launched. The already popular appliances, like television receivers, can be left to their own momentum.

Another interesting breakdown of figures on appliance sales was sent in by California - Pacific Utilities, and may give an indication of the situation as to sales in small towns in the Northwest and in parts of Nevada and California. In 1953 there were 223 more electric ranges sold than in 1952, an increase of 18.7%. In 1952 there had been a decrease of 110 refrigerators and freezers sold, or 4.9%. Total unit sales in 1953 were 104 more than in 1952, a 2.4% increase. In computing the sales per 100 customers there was a decrease of 18.7 units or 16.5%.

Appliance Sales

Ironers	Dryers	Vacuum Cleaners	Dishwashers	Waste Disposers	Radio	Television	Utility Merchandises Yes	Utility Merchandises No	Appliance Sales Estimated	Appliance Sales Dealer Reports	
											ARIZONA
478	531	....	428	614	13,225	16,256		X		X	Arizona PS
150	150	400	100	250	700	1,200		X	X		Salt River Power Dist.
....	....	....	....	....	....	....		X			Tucson GL&P
											BRITISH COLUMBIA
379	763	14,490	184	68	22,786	9,576†		X	X	X	B. C. Elec., Vancouver
59	126	1,461	20	7	3,930	2,015		X		X	B. C. Elec., Victoria
											CALIFORNIA
26	11	90	11	9	96	71		X	X		Alameda PU Dept.
12	60	110	25	190	210	1,600		X	X		Burbank PS Dept.
75	115	....	....	....	....	....	X		X	X	Calif. Elec. Power
625	399	3,750	255	210	....	....		X	X	X	Calif.-Pacific Utilities
120	319	....	128	....	3,294	4,471		X		X	Coast Counties G&E
....	....	....	....	....	....	....		X	X		Glendale PS Dept.
70	65	....	....	....	....	....		X	X		Imperial Irrig. Dist.
....	3,200	....	....	29,000	90,000	68,000		X	X		Los Angeles Dept. of W&P
....	....	....	....	....	....	4,600		X	X		Modesto Irrig. Dist.
6,225	15,073	....	5,691	3,966	86,659	159,727		X		X	PG and E
....	....	....	....	....	....	....		X		X	Pasadena L&P Dept.
....	....	....	....	....	....	....		X		X	Riverside PU Dept.
745	2,583	3,001	1,043	639	8,872	22,300		X		X	Sacramento MUD
2,375	2,495	17,975	1,125	6,375	40,300	50,650		X		X	San Diego G&E
....	....	....	....	....	....	....		X			Southern Calif. Edison
											COLORADO
....	100	....	....	....	....	....		X	X		Colorado Central Power
....	....	....	....	....	....	....		X			Fort Collins L&P Dept.
31	19	101	18	22	315	84		X	X		Frontier Power
50	75	200	39	20	550	700		X	X		Home L&P, Greeley
....	....	....	....	....	....	....	X				PS of Colorado
140	95	520	80	79	1,881	4,795	X	X[1]		X	Southern Colorado Power
											HAWAII
14,000	2,200	....	2,000	2,800	75,000	25,000	X[2]		X		Hawaiian Elec.
35	75	....	50	25	....	....		X		X	Hilo Elec. Light
....	....	....	....	....	....	....		X			Lahaina L&P
6	12	120	30	20	500	50[3]	X		X	X	Maui Elec.
											IDAHO
600	1,500	1,800	1,000	500	10,000	16,000	X[4]		X		Idaho Power
											MONTANA
1,200	2,000	2,500	500	500	9,000	5,000		X	X		Montana Power
											NEVADA
....	....	....	....	....	....	....		X			Elko-Lamoille Power
....	....	....	....	....	....	....		X			Ely L&P
....	....	....	....	....	....	....		X		X	Sierra Pacific Power
											NEW MEXICO
308	133	....	181	101	....	....		X			PS of N. M., Albuquerque
....	....	....	....	....	....	....		X			Raton PS
											OREGON
280	1,832	....	172	124	....	5,851		X		X	Calif. Oregon Power
....	....	....	....	....	....	....		X			Eugene Water & Elec. Bd.
....	....	....	....	....	....	....		X			Mountain States Power
1,742	8,231	....	1,480	345	27,556	43,051		X		X	Pacific P&L
....	....	....	....	....	....	....		X			Portland GE
											TEXAS
....	....	....	284	....	....	24,810	X			X	El Paso Elec.
											UTAH
10	[illegible]	30	4	5	20	....		X	X		Helper L&P Dept.
....	....	....	....	....	....	....		X			Logan Mun. Elec. Light Dept.
127	195	....	32	43	791	1,786		X		X	Provo Dept. of Utilities
....	....	....	....	....	....	....		X			Southern Utah Power
....	....	....	....	....	....	....		X		X	Telluride Power
1,928	2,963	9,812	606	491	13,068	21,517		X		X	Utah P&L
											WASHINGTON
27	139	200	49	53	329	178		X		X	Chelan County PUD No. 1
50	500	300	20	20	300	3,000		X	X		Clark County PUD No. 1
50	1,300	500	40	40	2,500	2,500		X	X		Cowlitz County PUD No. 1
....	....	....	....	....	....	....	X[4]				Puget Sound P&L
....	2,500	....	....	....	....	....		X	X		Seattle Lighting Dept.
200	1,000	2,500	1,000	500	3,000	4,000		X	X		Snohomish County PUD No. 1
			764	364	13,023	32,631	X			X[5]	Tacoma Dept. of PU
775	3,720	6,958	....	....	....	....	X		X		Washington Water Power
											WYOMING
240	120	670	180	70	2,140	1,400	X		X		Cheyenne LF&P

[1] Marginal reception.
[2] Limited.
[3] Includes Belen, Deming, Las Vegas, Santa Fe.
[4] All classes.
[5] Includes rural customers as of June 30, 1953.
[6] Reported appliances connected to its lines.

Market Comes to Life

Something new had been added to Market Week at the San Francisco Merchandise Mart Feb. 8-12. That new thing was enthusiasm and an interest in selling again. Of course a color television demonstration by five makes of receivers was new too but on the whole color was taken in stride.

The new enthusiasm and interest in selling was evident by the large attendance at the radio, television and appliance trade dinner Wednesday evening. Streamlined and shorn of head table and vaudeville entertainment, it had two top-notch speakers with practical advice.

Reports from exhibitors were generally favorable, with buying still cautious, but in the appliance business most of the 1954 lines had already been shown.

Given the assignment by Mart President Frank K. Runyan, LeRoy H. Bennett, manager, Northern California Electrical Bureau, arranged and was chairman for the trade dinner. Also arranged for on Tuesday night in the main auditorium was a demonstration of color TV on a private line brought in by KRON-TV. Sets of exhibitors in the Mart were elevated on tables around the auditorium, some with a black and white companion, to receive the closed-circuit preview in color of the following week's Fred Allen show. While the first five minutes were required to tune in the color properly, many of the sets having been flown in that morning, the results were viewed with interest by a large turnout who went from one set to the other to compare. Makes shown were RCA, Zenith, Columbia, Spartan, Westinghouse.

James B. Elliott, executive vice-president of consumer products, RCA, Camden, gave a rundown on the color TV situation, maintaining it would be an added service, not a replacement. Only about 100,000 sets, enough to sample dealers in the markets where color is to be broadcast, will be made this year; a half million next year; and by 1956, about 2,000,000. Prices, he said, would be nearer $1,000. Only 30 stations are equipped and 50 more will be in a few months. Scheduling of color during the first quarter may be 2½ hours per week, increasing to 10 hours per week in the last quarter. Color, he said, is the Cadillac and Lincoln of television. "An awful lot of black and white" can still be sold. The color fever has died down faster than anyone thought.

Dynamic Bob Bale, after kidding the former speaker, told dealers that it is a case of "you either have to sell or get out of business." He also warned that if salesmanship is mechanized on a self-serving basis salesmen will be eliminated. The zest in selling has been taken out of it because salesmen are no longer specialists. They cannot be when they have too many competing makes to sell.

Top—James B. Elliott, RCA vice-president, and Bob Bale, sales trainer, trade quips at trade dinner. 2.—Chet Worthington, regional sales manager for Whirlpool, right, and R. P. Lewis of Whirlpool Northwest Co., Seattle, meet in H. R. Basford, San Francisco distributor, exhibit. 3.—Market brought together Don Rennewanz, recently of Seattle, now Los Angeles, V. E. Koch, San Francisco district manager, and David E. Anderson, Hotpoint key accounts manager, Chicago. 4.—Westinghouse's new underslung vacuum cleaner shown by M. V. Musy, Wesco, and Paul Bradner, factory housewares man, to Claire Beatie, buyer for Hale's Appliance Stores. 5.—Don Hansen, Ervin and Paul Ensminger, Home Appliance Service, Berkeley, shown Thor's new built-in range units by John Southmayd, S. F. zone manager

ELECTRICAL WEST Sales Guide

News Letter

March 1954

©

FOR THE ELECTRICAL MERCHANT OF THE WEST

Either income tax or fear of unemployment is slowing up appliance business after a pretty fair January and February. The weather in the West can't be blamed; it has been exceptional. People just aren't responding to the advertising bait, even in Los Angeles and Fresno, where it has been wild. Noticeable improvement in attendance and interest at sales conferences and manufacturer showings tell that dealers are looking for ways to improve business.

Brakes are on

Frigidaire's big-time road show dramatized the dealer's question—"Are the old-fashioned selling methods passe or should I go back and work them hard?" The answer in every act was "Yes." . . . A glimpse of the Frigidaire Dream Kitchen of the Future, soon to be seen when the General Motors Motorama plays in Los Angeles and San Francisco, was given during the show through colored slides.

Selling is no dream

Color talk has almost disappeared since several demonstrations of color TV sets have been held. While color gives more realism, the small-size tube, high price and service cost quiet down the desire for immediate ownership. . . Its job done, NTSC, which developed color standards, has been dissolved. . . That color TV will bring a pay-as-you-see TV was predicted by Emerson's President Abrams, because of spiraling costs. . Although RCA expects to start selling a few color sets by April, others predict that few 14-in. models will be made by anyone. Already 19-in. tubes are being made and 21 are promised.

Color fades

More spectacular new things will be coming. Philo Farnsworth, whose inventions started television, told in Idaho Falls that new developments would soon radically change television. . . RCA itself announced an atomic-generating battery. . . Lee de Forest, who invented the radio tube, is working on converting heat directly into electric power. . . . Of more immediate possibility, Raymond Millard of Denver has a midget TV antenna the size of a silver dollar that can be hidden in the drapes.

More coming

The electric living centers, which Southern California Edison Co. put into deep freeze, are to be reactivated but their operation will have more of a public relations approach than a selling one. There will be 12 and they will be used for dealer training, employee classes, educational meetings for architects, builders and contractors, youth programs, tying in with Boy Scouts and 4-H and with home economics departments of schools. The first will open at Pomona May, Ontario June 1, San Bernardino July 1.

Changed mind

Portland General Electric has also reactivated an appliance sales promotional program with advertising, dealer salesman training and cooperative efforts with distributors, dealers and manufacturers. The power shortage in the Northwest seems to be over. — Power again

Thanks to the gas companies' "$25 for your old clothesline" subsidy to dealers for the sale of gas clothes dryers, a lot of electric dryer sales resulted in Los Angeles. Preference and safety still go electric. . . . It looks like a majority of sales in a campaign by the Rocky Mountain Gas Assn., the Denver Post and distributors in Denver would be electric dryers also. Seventeen distributors donate a dryer (one a day, five days a week) to contest winners. In the first week 8,000 entries had been made to the Post. — Prefer electric

It's already "Cooler Comfort Month" in Phoenix as the Appliance Merchandisers Assn. launched its March promotion on evaporative and refrigerated air conditioning. Climax will be Air Conditioning and Appliance Show, April 8-11, at the state fair grounds, Phoenix. PCEA business development conference will also be held in Phoenix April 8 and coordinated to the show opening. — Early start

Whopping sales program that includes employees and the industry with a "3-D" approach and a theme song, "Sell, Sell, Sell," has been launched through dealer and employee meetings throughout the state by Arizona Public Service Co. A feature story on it is promised for our June Convention-In-Print issue. — It has dimension

The first 100 of its 1,700 two-wire customers who agree to rewire their homes to install an electric range and water heater will have the wiring financed by Chelan County PUD. The customer pays $10 down, the balance in 20 payments without interest. The district, in its letter, offers the customer $20 toward the purchase of the range and $20 the water heater, providing the dealer pays half of it. — Help modernize

"The chaotic system of distributing appliances must be corrected or major and small appliances will disappear from hardware stores," R. H. Westerbrook, president, National Retail Hardware Assn., of Riverside, Calif., told its convention in San Francisco. "When people can buy appliances cheaper at auctions, discount houses and through employees at a discount, no dealer can meet this competition." — Discounted out

In Lewistown, Mont., Montana Power Co. opened the 1954 Light's 75th Jubilee at Annual Farm and Home Week with a big show. Action was injected with a "battle of the sexes" cake-baking contest witnessed by more than 600. More than 5,000 attended the week's showing, which was under the direction of Edwin R. Buck and home service advisors Bertha Wieloff and Doris Dickenson. — Light cake

All the big guns are trained on Congress to remove the excise taxes. RETMA for the radio industry, AHLMA for the home laundry industry, individual associations, chambers of commerce and even the CIO are requesting it. NAM has asked a flat-rate manufacturer's tax instead of the present tax system. — Tax protests

Second annual audio fair in Los Angeles drew an estimated 25,000 in its three-day run, Feb. 4-6, 25% above last year. Fewer "hi-fi bugs" and more ordinary people wanting good music attended. . . Following the show a High Fidelity Institute of Electronics Industries was formed with Jerome J. Kahn as chairman. Aims will be technical standards, new markets, trade practices, promotional methods. — Sound selling

Fair trade action

Georgia re-enacted a fair trade law by a mig margin after its supreme court had ruled the former act unconstitutional. . . Utah's Department of Business Regulation has warned all Utah merchants in a letter of the state's fair trade law and declared the Utah Trade Commission would enforce it. . . You probably have heard that U. S. Department of Justice has dropped its antitrust suit against Sunbeam over fair trade. . "How to Practice Fair Trade in the Market Place" is a booklet available from the Bureau of Education on Fair Trade, 205 E. 42nd St., New York.

Stop plagiarism

Injunctions have been granted to Admiral Corp. and Hoover Co. by courts against "Admiral Sewing Stores Inc." and "American Sewing Machine Distributors" to prohibit misuse of these trade names on foreign-made appliances. An injunction to restrain Mercury Vacuum Cleaner Stores, San Bernardino, from offering rebuilt cleaners without prominent display that the cleaners are rebuilt was granted by the U. S. district court.

Maybe you've heard

Among recent new things in appliances are these: Duo-Therm will break tradition and bring out its first electric water heaters, in 17 models including a tabletop, and in capacities up to 120 gal. . . Pryne & Co. of Pomona combines its model 209 Blo-Fan with its 100-w recessed fixture into a new kitchen ventilating hood easy to install and easier to clean. . . Another built-in electric range, either in a Stak-On or Slip-In oven model and surface cooking tops with two or four units, is being made by Steiglitz Corp. . . Griswold Mfg. Co., maker of commercial cooking equipment, offers a de luxe line for installation in large residential kitchens. They include waffle baker, two-unit hot plate, griddle, sandwich grill and wall oven.

... maybe it's news

Slim flat tubes are now used by Chromalox in its Micro-tube electric range replacement units, to give faster response and better control of heat. . . Calcinator announces a 1954 line of electric garbage burners, using 600 w over a 24-hour period. . . Westinghouse announced a ceiling-suspended Precipitron electrostatic air cleaner. It will fit to the return air duct of the forced air heating system. Will sell at about $385. . . United States Appliance Corp. says it has a mobile dishwasher, Jewel Queen Surg-o-Matic, that will use any soap or detergent. . . A low-cost, full-size automatic ironer in a cabinet at $99.95 is announced by Armstrong Products Corp. . . And the newest is an electric lunchbox made by Electro Lunch Co. with thermostatically controlled heat.

Logical

Bob Galvin, Motorola executive vice-president, told the San Diego Home Appliance Bureau conference that TV prices may go up in the next six months, implying better margins for maker, distributor and dealer, needed to sell in today's market. Full story on the bureau conference next issue.

Forever change

Shifting sands of distribution made these changes: Consolidated Appliances Inc. of Amarillo, Tex., will have northeastern New Mexico territory for Norge appliances and Crouch Appliance Co. of El Paso the Albuquerque trading area formerly handled from Denver. . . Walter F. Slagle & Co. of Denver has been appointed Raytheon TV distributor for Colorado, Wyoming and northern New Mexico. . . Leo J. Meyberg will sell its Los Angeles and Fresno branches, Al Meyer, president, said, and San Diego may have an RCA distributorship of its own. Meyberg will continue its San Francisco and Sacramento houses with the RCA line. . . James Kerwin Co. will now handle the Sentinel radio and television line. Kerwin formerly had Raytheon.

More movement

More distributor news: Fidelity Electric Co., the new RCA-Victor distributor in the Northwest, is headed by J. E. Gollihur, executive vp; R. G. Anderson, sm; Dale Healy, electronics department manager; Wayne Kuykendall, record department manager, all former Harper-Meggee men; and H. C. Mauze, credit manager, formerly of Radio TV and Appliance Co. . . McCormack Corp. in the Western Merchandise Mart, former Hoffman distributor, is now distributor for CBS-Columbia in northern California. . . Apex has made Graybar Electric its distributor in Denver for Colorado, western Nebraska and the southern half of Wyoming. . . Tel-Electric Distributors of Spokane has been made distributor for Hoffman for eastern Washington, northern Idaho and northwestern Montana, succeeding Prudential Distributors. . . Prudential Distributors of Spokane took on the RCA line. . . C. T. and Ed Nystrom have joined forces to set up a new distributorship in San Diego. C. T., as vp and gm, bought out the Kierulff & Co. branch, distributing Motorola and electronics products. Ed was heading the Amana Freezer Distributing Co. New firm is known as Nystrom Bros. at 2426 Fourth Ave. . . The Dexter home laundry line recently acquired by Philco went over to Philco-Los Angeles from Quality Distributors Inc. . . Thompson & Holmes now handles Hoover Holiday vacuum cleaner and Remington air conditioners in northern California. . . Parker Co. now distributes Hamilton laundry equipment in Denver, formerly carried by Allied Appliances, now distributing Norge. . . Independent Distributors at 1164 Elati in Denver is a new distributorship handling Manitowoc freezers, formerly served by Contractors and Heating Supply Co. . . Electrical Appliance Service Corp. has been appointed authorized parts distributor for Norge laundry equipment in Los Angeles.

Bigger move

General Electric Appliances Co., the company-owned distributorship started in 1945 in Los Angeles, has moved into a new West Coast headquarters in Vernon. The 127,000-sq-ft warehouse and office building is part of a G-E $150,000,000 expansion program. A special feature is the model-home section with complete electric kitchen and outdoor barbecue area. S. B. Maher is its manager.

Ready for summer

A warm winter will bring on the air conditioning season early. Recent additions to the makers of window air conditioners are Majestic Major Appliance Corp., Noma, maker of Christmas lights, Packard-Bell with a line of both evaporative coolers and refrigerated air conditioners. . . Fan people are capitalizing on the boom. Kisco, Lau Blower Co., Fasco, International Oil Burner Co. announce reversible window fans. Chico Air Cooler Distributors announces a portable cooler.

New positions

Among people: Albert M. Solen has moved his Denver address to 3033 E. 42nd Ave. . . A. O. Smith Corp. has promoted Allen O. Dragge to Pacific Coast district manager, filling vacancy for the past year left by H. F. Dietrick, now a vp in Milwaukee. . . Helmuth Tamberg was appointed general sales manager of the Admiral Distributors Inc., San Francisco. . . William H. Pearce has been made general sales manager of Globe Distributing Co. in Denver. Lou Golm, formerly Larson Distributing Co., is now Boyd's southwestern area manager. . . Ben Sanderson, formerly in the West for Deepfreeze and its general sales manager since 1950, becomes gsm of contract sales. . . R. H. Lloyd has been named district appliance sales manager for the Pacific Northwestern district of Graybar Electric, Seattle, succeeding N. A. Hayes, who resigned. . . Robert Swanson of General Electric Appliances, Los Angeles, was transferred to Indianapolis as sales manager of a new G-E distributorship being established there. . . E. C. Brode, who was West Coast zone manager for Bendix, has been made regional sales manager for the Western and Mountain States.

Ray Cox turns the presidency over to Robert Williams, a dealer (others in picture are Johnson and Logan), who pledges that . . .

L. A. League Will Continue Program

Sandwiched in between a dinner and dancing the Los Angeles Electric League provided the meat of the occasion by telling some 300 of its members and their wives of its activities during the past year and its plans for 1954. The occasion was the league's annual banquet at the Hollywood Roosevelt, Feb. 18, presided over by Glen Logan, manager.

It was also the occasion for inaugurating Robert D. Williams of Brand Appliance Inc., a dealer, as the new president to succeed Raymond D. Cox, Horn & Cox Inc., a distributor, and to introduce the officers recently elected. Executive vice-president is Kenneth R. Johnson of Packard-Bell Co., secretary is W. Floyd Lovelace, Los Angeles Department of Water & Power. General Counsel Samuel D. Robbins and Field Representative Jack W. Wartels were also honored.

A special tribute was paid to the electrical contractors' division by retiring President Cox. This division, headed by Leo Allen, Barker-Allen Electric Co. of Hollywood, graduated approximately 65 men from the estimating classes conducted by the league with the assistance of the Los Angeles school system. The contractors' group of the league consists of about 90 firms.

Other accomplishments for the year, listed by Cox, were the obtaining of simplification of the yellow section of the telephone directory; a "Steps to Profit" merchandising course under chairmanship of Ed Altshuler, attended by 70; appeals to the city building and safety department regarding certain appliances, particularly removal of restrictions on clothes dryer installations. The lighting division held a series of merchandising meetings under Chairman Nat Blumberg and produced a booklet distributed by utilities and dealers.

In television the league has reported set distribution figures to the industry, produced a program to advise the public as to the facts on color TV, distributed TV and Appliance Trade-In books. Meetings on white goods, TV service, air conditioning and other phases of operating a business have been held, Cox reported. A group insurance plan, a small claims court service were also listed as services. Defeat of a proposed city TV license bill and similar action opposing a state TV licensing and a parts warranty bill were mentioned. An all-time high membership was reported by Cox of 450 firms, for which Wartels' work was credited.

TV dealer Stan Everett's service men dared him to wear this space helmet, complete with radio, which they concocted—he did

In his acceptance, Williams broke down the membership as consisting of 202 dealers, 50 manufacturers, distributors and representatives, 94 electrical contractors, 18 in the lighting division, 58 in radio and television service, 10 in white goods service, and the remainder in miscellaneous.

Williams also named 24 committees and their chairmen, and urged all members to become members of the committees in which they had interests. The staff, he said, plans a continuation of the "Steps to Profit" course.

In the reduction of headings in the telephone directory, under which appliance dealers were solicited to advertise, the telephone company reduced from 44 to 19. However, in doing so they eliminated a heading called "Appliance Dealer" in the front of the directory, which the members wished

restored. Efforts to have that one restored will be made.

Membership in the Burbank, Pasadena and Glendale areas, with meetings and activities there, and the cooperation of the utilities, will be sought in 1954.

The directors, made up of 15 retailers, 15 wholesalers, the utility and several special classifications, were then introduced. At the head table, the executive committee of the board of directors present included Neal B. Barry, Penny-Owsley Music Co.; L. E. Starkweather, Leo J. Meyberg Co.; Walter Ostman, Philco-Los Angeles; Clyde Wallich, Wallichs Music City; Kenneth R. Johnson, Packard-Bell Co.; Robert D. Williams, president; Raymond B. Cox, retiring president; Samuel D. Robbins, counsel; Al Ayeroff, treasurer; E. E. Young, Sues, Young & Brown; Russell N. Carlson.

Speaker of the evening was Paul Zimmerman, sports editor of Los Angeles *Times*. Zimmerman said he had no quarrel with the appliance industry for the labor-saving devices it had sold him but recounted numerous incidents that he attributed to television, spoiling a sports writer's easy life.

A purported "dealer from Texas" gave a burlesque talk advocating some of the cutthroat discounting and pricing Los Angeles dealers have suffered from of late. He was introduced as "John Stedman of Pratt Appliances, Dallas."

The contractors' division estimating courses, to explain in more detail, came as a result of requests from many of the members. Leo Allen, a practical and practicing contractor, was asked to teach. He prepared himself with a course on teaching from the university. The classes are now in their fourth semester, or second year. Each course runs 20 weeks, on Tuesday nights from 7 to 10, in the Matchless Electrical Home of the Department of Water & Power. The program is part of the adult education program of the Los Angeles city schools.

Allen explains that the course starts out with cautions as to numerous things that those estimating work should watch for. Included in the course are a brief review of the variout branches of the industry and their functions, business and public relations, the estimator's responsibility, advice on getting along with people and especially employees, credits, purchasing, use of forms in estimating takeoff, a definite plan of take-off, and the last four or five weeks typical jobs are estimated. These are sealed and then in later meetings are opened and reviewed and analyzed.

For the latest course, Graybar Electric has sent 10 salesmen, feeling it is an excellent background for supply salesmen to be acquainted with estimating problems.

Those who have previously participated and graduated are often used as helpers in the instruction, Allen said.

The contractors' division is also working on revision of the Los Angeles electrical code.

Another successful "operation Death Trap" carried on by the league was aimed at eliminating ice boxes and old refrigerators as death traps for children. The Department of Water & Power metermen reported any abandoned ice boxes or chests along their routes. These were turned over to the police department in geographical order. The police called on the tenants or owners and instructed them on how to take the hinges and latches off such traps. Some 616 abandoned ice boxes were found and removed from danger.

The Electric League is to have its day at the Los Angeles Electric Club March 22 and plans a hi-fi demonstration, including three-dimensional sound. Also will be shown the chord organ and Singer projection television on a closed circuit.

John Sandoval and his merry men in pajamas cook breakfasts with housewares proving . . .

The Five Senses Sell Them

Climax of a fast-moving presentation and demonstration of the new Sunbeam Frypan and a new percolator, given first to distributors and then to dealer and salespeople, was a clever four-breakfast stunt illustrated here.

As John Sandoval, Sunbeam factory representative for northern California, closed the demonstration of the two new appliances, he unveiled a table or series of tables at which his four district representatives stood, attired in a variety of pajamas and a nightshirt. Each then proceeded to prepare a breakfast using Sunbeam appliances exclusively, each different. Even the iron was brought in to press a pair of pants, and the electric blanket to assure a restful sleep for the "bachelor's solace."

These presentations were made first to Sunbeam distributors in each of the trading areas. This was followed by similar meetings to franchised dealers and their salespeople in 34 cities of 10,000 and over. Audiences averaged from 150 to 200. Purpose was both to introduce the new product and to show simple and effective ways to demonstrate them. Details of the promotional program dealers are now using in their stores were unfolded at the same time.

These two new appliances were shown first in the three Pacific states in February and March. Similar showings will be carried on in the Mountain states beginning in March and through April.

While the percolator is an addition to the line's familiar Coffee-maker, the electric frypan is a completely new appliance, the only one made as yet. The automatic control of heat and the ability to wash it in a dishpan are features that should make it a very popular item.

This method of introducting new products illustrates how effective live demonstration is in creating sales. All five senses—smell, taste, touch, sight and sound—combine to build desire and bring about buying action.

Old Fashioned Selling Proved Best

It seemed like old times to many—and Frigidaire has more of its original dealers still with it than other makers—and to the new ones it was an exhilarating experience to witness Frigidaire's big road show last month. The Western troupe, led by W. I. Buchanan, manager of the Pacific sales region, combined regional staff members, professional actors and professional staging, movies, color slides and an excellent script to make the show a memorable one.

First performance was given to the Oakland division Feb. 8, from luncheon to 4 p.m. To accommodate all dealers in southern California two shows were given in Los Angeles; one in Portland, Seattle, Spokane, Salt Lake City. The company's new range line had been shown in January to smaller groups. Emphasis in the big show was on the new models of refrigerators and on salesmanship.

With a dream sequence idea a dealer, undecided whether the old-time selling methods of hard work and service were passe in these days, was shown both the entire product line and that the old-fashioned energetic selling methods were the effective ones to outsell competition of price with value and service.

Always exclusive, with a full porcelain line greater emphasis will be placed on this plus value. The Cyclamatic refrigerator, in three models, will have prices from $10 to $30 lower than last year. More extra features are added in each of the models in the three lines, Super series, Cyclamatic and Imperial. Choice of three pastel colors for the exterior, to go with kitchen decoration schemes, is offered in porcelain in the Imperial line. A 15-cu-ft, two full vertical door refrigerator, 38 in. wide, has been introduced.

Real pioneer in window air conditioners, 25 years ago, Frigidaire offers models that are flush with the drapery inside the room on all models and on the ¾- and 1-hp models, there are double Metermiser units to reduce operating costs. Heater models and thermostatic controls are available too.

It is in the selling message given dealers each show that Frigidaire is always outstanding. Two such powerful messages are given in this performance. One is by the woman actress who tells the dealer to look at appliances he is selling through her eyes, the customer's, to get to her early before she starts to shop around.

Bill Baldwin, Oakland division manager, Jim Cronin, sales manager, and W. I. Buchanan, Pacific regional manager, proud of the colorful new colored Frigidaire top appliances

The other is a film in which Arthur Godfrey gives a down-to-earth and human man-to-man talk to salesmen on the importance of their profession.

Inland Sunshine for Monday Wash Day

"Winter sunshine" is the name for electric dryers in the Inland Empire, better known as Washington Water Power Co. and Inland Empire Electric League area around Spokane. As the first drive of the "United Effort —Big Switch" program for 1954, electric dryers were played up. Each Monday (wash day) the public is invited by newspaper ads to guess the amount of sunshine on a given day in Spokane. Entries are made on blanks obtained in a dealer's store after a demonstration of laundry equipment, countersigned by the dealer. The weather bureau at Geiger field gives the data on which the weekly winner is judged. Two dryers were given away each week of February.

Seasonal campaigns set up by the power company and league are designed to help balance the load. Commercial lighting promotion is due in March. Cooking, air conditioning during the summer, lighting in the fall. Even street lighting quotas have been set in all divisions. Company services to back up dealer selling include wiring promotion, kitchen plans, light conditioning plans, demonstrations in dealer stores by company home economists, advertising, even field preselling up to the point of taking the order.

Washington Water Power predicts that Inland Empire dealers will sell $30,000,000 worth of appliances in 1954. One-fourth of the customers surveyed on buying plans said they were "pretty certain" to buy at least one appliance in the next six months.

Winner of second free dryer in Spokane's contest, Mrs. Herman Thoms, is presented her prize by Rudy Tortorelli, True's Distributing Co., John F. Boothe, Brown-Johnston Co., and Melvyn Dahlbergh, IEEL

A valance around three sides and down spots for accent light condition the living room of

Arizona's G-E Wonder Home

D. F. Flynn, district manager of G-E construction materials division, shows Mort Kimsey, Scottsdale manager, and Don Willis, sales manager, of Arizona Public Service Co., the details of the lighted valance above and explains the remote control wiring for it

• PHOENIX was selected to have the first of the General Electric Wonder Homes being sponsored throughout the country to demonstrate the ease and practicability of integrating modern electrical equipment into the home.

Appropriately, too, the home chosen was one built by Oliver Burnett, president of Valley Sales & Service Inc., a G-E dealer in Scottsdale, Ariz., who is better known as head of Kelso-Burnett Co., a large Chicago electrical contracting firm, and a vice-president of NECA.

The six-room house (which has 1,800 sq ft) incorporates a G-E 5-hp Weathertron (heat pump), a complete kitchen and laundry, electric water heater, freezer, light conditioning, remote control wiring for switching of the lights, and a 200-amp Trumbull service entrance with circuit breaker panel. Counter tops in the kitchen and bathrooms were made of G-E Textolite plastic surfacing material. Provision was made for use of television and radio receivers and small appliances.

The Burnett home is located at Sundown Ranch Estates, 20 miles from Phoenix, and was opened for public inspection for a month. The first day 6,500 visitors passed through it.

Representing Arizona Public Service Co., Les Waggoner coordinated service facilities and consulted on the light conditioning and wiring arrangements.

Light conditioning was under General Electric Lamp Division's specifications and included valance lighting in the bedrooms and living room. Down spots over all work centers and reading areas, closet lighting in the bedrooms, were all on remote control switching. Twenty-four circuits supplied the house and the main service has three 2/0 and one No. 6 wire connected to a 200-amp main panel. Service in run underground from the lot line. Master selector switches in the living room and bedroom control outdoor lights as well as key lighting in various rooms of the house.

Fluorescent lamps were used extensively to give maximum light with minimum heat. The living room valance lighting extends all around three sides of the room, supplemented by reflector spots over plant pocket and coffee table, and an adjustable fixture over the dining room table. Valley Sales & Service Inc. of Scottsdale, Ariz., made the electrical installation. Ralph Haver was the architect for the house.

On the cover Oliver Burnett and Henry Sargent, Arizona Public Service Co. president, are seen at the distribution panel.

Health and Welfare—Area or Local?

Closer track of the program, quicker answers to eligibility, lower operating costs involved

It sounds so simple—7½c per hour for health and welfare. But immediately the details start cluttering the process. There is nothing simple about it. In fact, the complications and details necessary have occupied seven months of negotiations and meetings, discussions and adjustments, appraisals of various plans and learning of problems. In the San Francisco Bay area, the actual operation of the plan, as far as benefits are concerned to the electrical workers, began Feb. 1 although the union agreements voting the program dated back to last July and payments into the trust fund have been made since October.

In complete sincerity, Oscar Harbak, vice-president of International Brotherhood of Electrical Workers for District 9, advocated a uniform area-wide program for the entire district. His reasons were that coverage would thus be afforded electrical workers wherever they worked in the Western states. Several things interfered with such a concept, however. Not all of the agreements last year contained the health and welfare provisions. The factor, more important still, was that widespread plans make it difficult to get action at the point of need because of the cumbersome machinery required for safeguarding the funds and administering the program.

Two Different Problems

In the San Francisco Bay region it was logical and desirable that the various associations and unions having similar agreements, scales, vacation and welfare programs have a uniform program. Likewise, there is more traveling to various parts of the Bay area by members of the various locals as work opportunities arise.

In Sacramento where the program was also voted, efforts to have it join with the Bay area on an area program for northern California were turned down after mature consideration. As a result the Sacramento Valley Chapter, NECA, and Local 340, IBEW, developed a local program that has many features worth consideration by any other Western locality that enters into such an agreement.

In the San Francisco Bay area, representatives of the San Francisco, Peninsula, and East Bay contractors' associations and unions met constantly to work out the area plan. After consideration of all bids as to benefits to be offered, a contract was signed with the California Physicians Service, known as Blue Shield, and the program went into effect Feb. 1. The trustees were elected by each of the organizations involved. An advisory committee was set up and the details developed. Tied in with it in reporting was the vacation plan, also in force in these areas. Hence, the monthly transmittal by the contractor regarding the name, social security number, hours worked and earnings of each employee of the union includes also the amount of vacation allowance. As yet, Sacramento does not have the vacation program.

The Sacramento program had the experience with several other building trades' health and welfare plans to warn it of some of the dangers and difficulties it might encounter. The manager of the chapter, William Welsh, having had many years experience in the builders' exchange, the plumbing and electrical contracting fields, learned of the difficulties in the plumbing and in the carpenters' welfare programs that have been on an area basis. He was thus able to get his program into effective operation by Nov. 1, 1953, on a local plan of operation that so far is working well.

Association Is Administrator

There, the association office handles the records of man-hours and funds and eligibility. A "broker of record" was not designated as it was felt that going through such would only add to the delay in getting claims processed and information as to eligibility back to the union worker. Broker administrator plans has not proved successful in other trades because the brokers had no intimate knowledge of the trade and could not check discrepancies themselves. They referred these back to the trustees or union office to trace down, which meant that most of the work had to be done locally anyway. Information on qualification of workmen for benefits was so far behind that the employees could not find out whether or not they were covered.

Another reason Sacramento considered the local plan best was that in future negotiations all local conditions and wages will be negotiated locally rather than mixed up in an area-wide agreement. In an area plan when one chapter or union negotiates an increase all others are forced to come to the same level or all go back down. It can cause considerable turmoil or end in area-wide collective bargaining.

In some of the other trades it was found that many contractors were employing men and not paying into the fund because of lack of interest and follow-through on the part of the union business managers. The same thing is true of the benefit fund for union pensions in many localities.

The machinery through which the union member must go increases with the remoteness from the local association and union. Office work and routine in some cases required as long as six weeks to three months from the time the employer sent in the payment and report to a bank and the union or association received records of eligibility. Employees in doubt as to their coverage had to go through the union office and from it to many channels to get the information.

Try to Break in on Benefits

Another abuse found was that many ineligible or unauthorized persons slipped their names in. Some employers, when they desired to secure hospitalization for themselves and families, have resorted to deceptive practices. Unions cannot spend the time checking the names closely and are inclined not to care if losses are incurred but in this way many a "working contractor - union member" put himself into the plan. Usually it is someone who has an operation he wants performed or some expensive medical treatment that does so. Rates are developed on the basis of an entire group. Addition of such burdens on the plan can increase the rates.

In some cases it was found that when employers participate they report only the minimum hours necessary to qualify and no excess hours are paid into the general fund. Sometimes, if checks are not made, the employers will enter into agreements with employees to report only minimum hours necessary and pay the

difference to the man. Sometimes an employer only reports the minimum hours and the employee does not know the difference.

Coordinate With Pension Detail

Having a pension plan operation in its office, the association can check the employer reports with the health and welfare reports. The union office can reduce time and telephone expense to enforce collections by checking both at the same source. The reporting forms follow each other closely and both pension and welfare reports can be mailed in the same postpaid envelope. To encourage this, the association is sending out the five pension forms and one welfare report in the same envelope, about the 25th of each month, with a postpaid envelope enclosed.

Pension payments, not accruing to the benefit of the individual members, do not bother the employer very much. However, under the welfare plan it is provided that employers failing to report and make payment for employees will be personally liable for all the benefits that the employee would have had under the plan. Thus the personal liability of the employer is similar to his failure to carry compensation insurance and, in addition, employees are vitally concerned as to whether or not their employer is keeping up their insurance. The local union officials cannot ignore or permit any delinquencies, such as happen under the pension plan, because they are on the spot with the individual members too.

Although in theory a large area with coverage extending into the thousands should provide economy and a spread of the risks, experience in other building trades reveal some abuses have crept in. Traveling and subsistence expenses for trustee meetings have been abused. The best hotels, refreshments and food have been of more consideration in some cases. Sums such as $25 per day for each meeting attended have been voted. One trustee group held four separate meetings each day to collect $100 instead of $25, it was reported. Expensive attorneys, certified public accountants on the pay roll and brokers receiving percentages, record keeping expenses and even sometimes a charge for each employee card, all eat up any advantage of a wide area plan. In an association office, one good girl with initiative can handle both the pension and welfare plans and can do telephoning and collection work to follow up employees and make sure they have not lost their insurance through negligence or oversight by their employer.

In the Sacramento office a Kardex system with visible index has been set up. Employers' accounts are posted each day received and the employee accounts within two or three days. Once an employee has qualified he will be covered for at least three successive months whether he works or not. Other similar details for following up and checking are more intimately cared for.

Likewise, the hospital can check the association office to verify coverage if the carrier's main office (CPS in this case) is in San Francisco or elsewhere. In the Sacramento association the cost of handling was less than 75c per man per month. The cost of the plumbers' program has run as high as 22% on an area-wide basis. Even this does not cover the additional cost to local unions and associations to take care of all the irregular reports and discrepancies.

Stabilizes the Employment

Another contention for the district-wide or large area plan is that it permits members of the union to travel into other jurisdictions without losing their benefits. Some contractors feel they will be unable to attract men in from other areas when men are badly needed. However, from the contractor's standpoint this also works in reverse. Men will not be attracted out of the area for overtime or other lucrative jobs so easily. This should balance the other consideration.

It has been noticed that men do not leave their homes and families as a general rule except for two reasons. The transient workers go where the grass is greenest; the unemployed go elsewhere to seek work. However, men sent out by the employer will be covered continuously, regardless of where they are, if they are working from the employer's agreement jurisdiction. The transient seldom concerns himself about welfare, using doctors and hospitals provided by the counties.

An unemployed man, not accruing hours to his credit, uses up a surplus that he builds up and has a minimum of six months coverage, three from the fund and an opportunity of three months he may pay for himself. Likewise, as other plans come into general use, men going into another area having a plan would become qualified under that one by the time his local one would cancel out. If he goes into an area that does not have a plan it would make no difference under either situation. Men traveling from one jurisdiction to another must accept the wage rates and conditions established locally.

Employers Want a Plan Too

It is only natural that employers, providing all of these social benefits for their employees, may wish coverage of these kinds themselves. Likewise, if they have a larger organization some of their nonunion office and management personnel should be covered too. Evidence of this desire is to be found in the number of employers who have attempted to slip their names and those of their families somehow under subterfuge in some of the other building trade programs. There have been cases where the employer put his business in the name of dependents and listed himself as employee or where the business was transferred to names of others outside the family. Such people usually want a free ride on a costly surgical operation.

However, the San Francisco Electrical Contractors Assn. has been considering seriously the establishment of a plan with the CPS for coverage of its members and their families and such employees in their management and office as may wish to participate. This would seem to be an answer to this problem in connection with health and welfare programs.

Fitting the simple "labor gain" of 7½c per hour for health and welfare into the intermittent employment pattern of the electrical contracting business has been a major engineering and accounting feat. The San Francisco Bay region is indebted to the Northern California Chapter of NECA for the methods developed by it to handle the vacation plan earlier. Now the other unions obtaining vacations are following the Oakland example. Health and welfare too is using some of the machinery and thus eliminates duplicate overhead costs of administering these benefits. With the earnestness displayed by the trustees so far to obtain as much in benefits for the members as possible and reduce overhead costs, a good start is made in keeping the programs free from defects found in other building trades, some of which have caused scandal and discredit to the industry.

New Thermal Insulation

A new "thin-wall" thermal insulation only a half inch thick, compared to about 3½ in. of insulation on conventional refrigerators, has been announced by General Electric Research Laboratories. The insulation is in the form of evacuated panels strong enough to resist the crushing weight of outside atmosphere. The metal panel walls are kept separated by specially processed glass fibers. The new insulation may be used for the construction of home refrigerators and freezer units so small that they may be hung from kitchen ceilings, mounted on walls or tucked away in kitchen cabinets.

At night, as seen from the hill back of the prison, a wide area before the walls and over the bay is clearly visible. Thus . . .

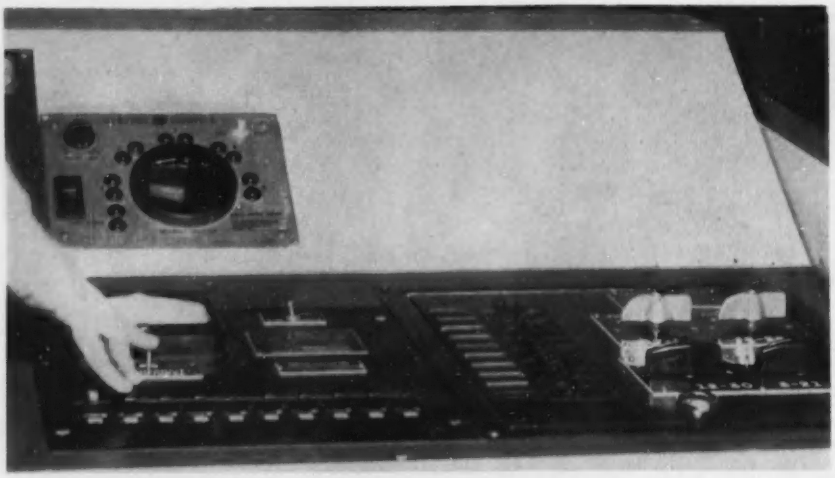
Light Makes an Extra Fence

Two of the 80-ft poles mounting 12 units aimed where needed, showing transformers

Light is like a fence, an additional protection, at California State Prison at San Quentin. This is the way the staff feels about it for a well-illuminated area surrounding the prison gives them added protection.

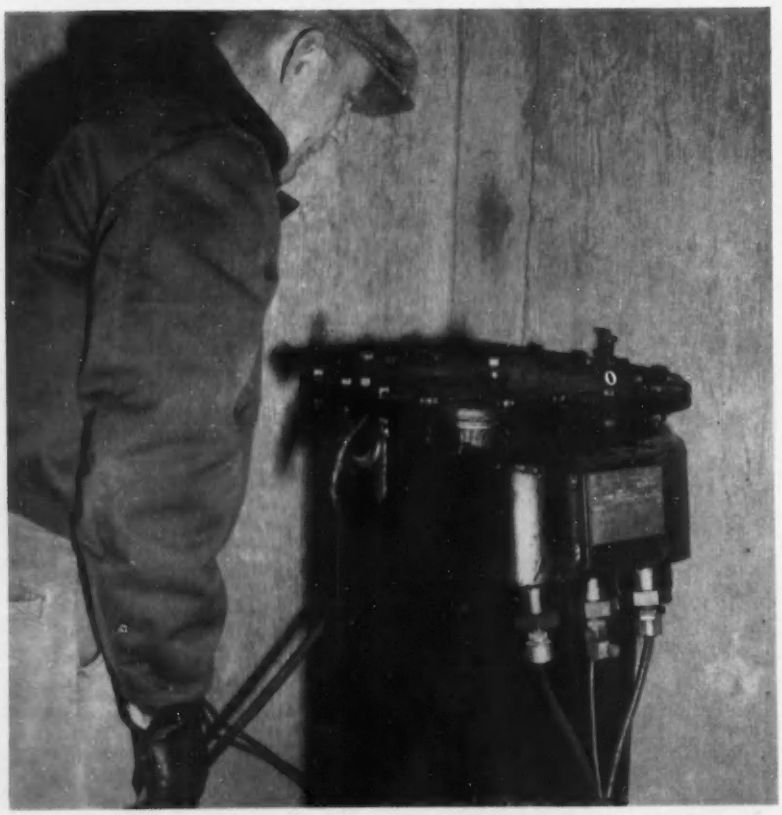
The pioneer prison was not designed originally in an engineered pattern for maximum security. It grew, building by building, as the population there increased. Hence the problem of keeping the area well illuminated called for special treatment. James Barnes, Pacific Gas and Electric Co. lighting engineer at San Rafael, was originally asked by Clinton Duffy, then warden, for advice in the relighting. He worked with the State Division of Architecture at Sacramento and the present program, which is about half completed, was initiated. There are at present seven 80-ft steel poles located outside the walls along the edge of the bay to mount high-intensity floodlight units similar to those used in football fields. Each standard mounts 12 1,500-w units, a total of 18 kw per standard. Each standard also has on it a 15-kv transformer to reduce the primary voltage of 2,400 to the 110 v needed at the lamps. Some of the units are directed upon the bay adjacent to the prison walls and some against the walls, creating a well-lighted and completely visible zone. Control is from several points through relay circuit arrangement and is so arranged that the lighting can not be blacked out.

Prior to this installation there had been some darker areas, which the employees did not like. With the new illumination there are no dark areas at all in the completed section and the morale of the staff has improved. The installation was made largely with prison labor under the supervision of the Department of Public Works.



Remote control board (left) by which control tower operator fixes intensity of new landing lights at Denver's municipal airport

All-Weather Landing Lights for Denver



Induction regulator controls voltage to twelve 5-kva transformers located in field vaults

Landing lights, said to be the brightest runway lights in the world, capable of penetrating any weather front, have been installed along the 10,000-ft east-west runway at Stapleton Field, Denver's municipal airport. The lights will pierce virtually any weather front, enabling planes to land safely under extreme conditions.

They are bidirectional controllable beam, variable intensity lights, manufactured by the Line Material Co. There are fifty-five 500-w, 250,000 beam candlepower lights, approximately 200 ft apart, along each side of the runway. By means of a microswitch in the control tower, the lights can be increased from 500 candlepower to the maximum 250,000 candlepower in seven seconds. This eliminates stages or steps in control of intensity. The tower operator fixes the intensity requested by the pilot in landing or taking off.

A 50-kva induction voltage regulator was installed in the main transformer vault in the airport administration building. It regulates the 2,300-v supply to 12 5-kv distribution transformers in the field. Each transformer feeds from 9 to 10 lights. Seventeen miles of cable were installed by direct burial except underneath the runways, where ducts were used.

Voltage impressed upon the lights regulates the direction of the beam. The bulb sets on two pinpoint sockets attached by lever arms to a bimetal and compensating thermocouple. The voltage is impressed across the bimetal element causing the light to move in a 7.5° arc, turning the beam in a 15° arc. Lighting units are provided with Bartow patented lenses.

Thompson Electric Service Co. of Salt Lake City was the contractor on the $79,135 project. CAA paid about $60,000 of the total cost.

ELECTRICAL WEST Contractors' News Letter

QUICK NEWS ON TRENDS, LAWS, CODES, MATERIALS, EQUIPMENT, COSTS, WAGES, ETC.

New headache

As if negotiations on its hands were not enough, the Los Angeles chapter, NECA, has an NLRB case thrust at it too. Ironically this may kick out its closed shop, something the once open shop capitol, Los Angeles, took a long time to establish in electrical work. The NLRB has asked the chapter and union to take a consent decree and open up shops again. Under Taft-Hartley they're illegal but most closed shop areas maintain they are working under a continuing agreement that pre-dates T-H law. Yearly amendments for wage increases and fringes do not cancel the agreement, they say.

Legal or illegal

Real question is whether associations have the right to bargain anyway for members and non-members in an area. Under T-H each shop should hold an election of its own employees. Riding the "continuing" agreement, this almost impossible requirement has been ignored. Whether this case will open up the construction industry may well have to be decided in the courts. Can the association legally "consent" if it was illegal in bargaining?

Lid raised

Cause of the ruckus was that an electrician on permit who once worked for a contractor near Los Angeles was laid off when a job was suspended. Reporting when work was resumed, the man was sent to the union for clearance. By the time he got to the union hall, the job had been filled by a member. He went to NLRB. It dug into the closed shop.

Reason for change

Among the proposed revisions to the Taft-Hartley law is one to legalize agreements between an association of employees in the construction industry and the building trades unions, because it has almost always been done that way. Opponents point to the monopolistic situation both as to employment opportunity and contracting this would legalize—it already exists of course.

Light for industry

An industrial lighting parallel session has been added to the program of the Illuminating Engineering Society, South Pacific regional conference in San Francisco Museum of Art, April 19-20. Leonard Hobbs, Smoot-Holman and IES regional vp will tell of RLM and other standards; Bert Osterman of T. L. Rosenberg Co. will cover maintenance programs; Harold L. Gerber of Coddington Co. will discuss ballasts and a description of the new Ford plant lighting plan is being arranged.

1953 guide

Abbott's Code Handbook revision for the 1952 NECode will be off the presses late this summer, McGraw-Hill Book Co. has answered in response to many inquiries. Although Arthur Abbott died last year, his work will be carried on by capable hands. Another interpreter and illustrator of the Code is Siegel, whose two-volume work diagrams the rules, is finding great favor among inspectors and electricians. Same publisher.

More entries

"My Most Interesting Lighting Job" contests in most of the IES chapters and sections in the West are being run off in March so that winners may compete in the three regional IES conferences in April—in Denver April 15-16; San Francisco, April 19-20; Seattle, April 23-24. The Denver conference will be the first ever held in the newly formed Intermountain Region, which has a section in Denver and chapters in Pueblo, Phoenix and Salt Lake City.

Train 'em young

NECA is going over the heads of the union and the joint apprenticeship committees to build a crop of young electricians with its Sat. Eve. Post ads. It offers instruction sheets to kids to tell them how to make motors, buzzers, etc. Thus it unconsciously joins the "do it yourself" movement. But it's all to the good. The industry is going to need far more electrical workers than are being trained.

Misplaced cut back

Aftermath of the change in deadline date for national dues to NECA from January to March has made a casualty out of the Western regional office of NECA. Shortage of funds was given as a reason for closing the S.F. office (yet other costly programs go on). Western chapters and members are ired by this cut in the one benefit—field service—that they really feel and see for their national dues.

Time again

Another lighting clinic similar to that held at the Elks Club in Los Angeles a few years ago is being developed by Ted Shepard, illuminating engineer, Los Angeles Dept. of Water & Power. It will be for all in the lighting field of the industry and be presented by representatives of many companies and products.

No boom, not bad

Exceptionally mild weather in most of the West has enabled many construction jobs to finish ahead of time. Building continues at a fair pace but competition is really sharp. Everybody with a sharp pencil seems to be on every bid. Still, wiring business seems to be better than appliance sales in many areas.

Tours region

Phoenix Chapter of IES heard G. B. Buck II, regional vp for the Intermountain Region speak of "Lighting Progress and the IES" at its Mar. 5 meeting. The April meeting gives way to the regional conference. Tucson is being considered for the May meeting.

Valued more

Psychology note: Experienced Dr. Grace Morley, director of the San Francisco Museum of Art, decided that admission would be charged the public to view the 5-week exhibition of interior design, color and light that will be a feature of the S. F. IES conference (free to registrants). Her reason, not financial—more people will come if they have to pay.

Try a new day

A new time for meeting, at least for a trial period, was voted by the Northern California of International Assn. of Electrical Inspectors. Instead of the Saturday meetings, long popular with both inspectors and their wives, the regular meetings will now be on a week day. A social meeting once or twice a year will be for the inspectors and wives. First one such held was at San Mateo, Mar. 10. O. G. Wedekind, UL engineer, showed how TV tubes implode.

Setting dates

Inspector chapter meetings at which Charles L. Smith, IAEI secretary, will attend are being scheduled in April. Definite dates are not yet announced. To coordinate them so Smith can make a circle trip and attend all takes some doing. He'll probably start with Montana Chapter, go to Washington state's two chapters, then Oregon, California, Nevada, Utah and finally Colorado.

Sold out

Electrical Maintenance Engineers' big Industry Show April 1-3, Shrine Convention hall, Los Angeles, is an assured success. All space was sold out, added 18 more, sold those too. It will open with a luncheon Apr. 1 at the Statler, addressed by a national figure, followed by a preview from 2 to 5 p.m. Then it opens to the 15,000 invited engineers, contractors, plant men. Saturday will be students' day, all engineering students from junior and senior colleges, trade schools, etc., will be invited. At a luncheon at the USC cafeteria school awards will be made.

Officers named

Stan Rejda was elected EMEA president by the board of directors last month. Formerly with Westinghouse, he's now chief engineer for Johnson Electric Co., Glendale. John J. Singleton (managing this year's show) of Lever Bros. was named first vp; Aubrey LaForce, Axelson Mfg. Co., second vp. Jack Cochran, General Petroleum Bldg., was named secretary-treasurer but leaves for a new job in Texas, so it will require another selection.

Branch out

Inland Empire Chapter, NECA, now has a new Central Division for the Wenatchee area. Field representative Joe Bollinger brought this about with Bob Wilkinson, chapter manager. Neal Grahm, Basin Electric Co., Moses Lake, and V. E. Dillon of Wenatchee were elected to the chapter board, Grahm being chairman for the division.

Still waiting

Congress had not acted as yet on S. 848 and H.R. 1825, the Federal Construction Contract bills, at press time. At last report the bills were in the Rules committee awaiting being taken to the floor.

Top jobs

Several Westerners were named to important posts in NECA in recent weeks. Walter A. Soule, Jr. of Denver was named to the Line Constructors committee as C. H. Simpson of Cheyenne resigned. J. D. O'Connor of Sacramento was named on the Council on Industrial Relations. (By the way, Erne Carlson of Youngstown succeeded Robert McChesney as chairman of the council.)

Committee men

Other appointments: E. B. DeFeyter, Spokane and C. H. Simpson, Cheyenne on labor relations committee; R. C. Hughes, Spokane, chairman; John N. Corbin, Phoenix; Charles Wikle, Los Angeles and now Soule, Line Constructors; A. L. Berg, Los Angeles and J. E. Collier, Denver, on Business Development; L. J. Reynolds, Santa Fe, J. D. O'Connor, Sacramento, and Claude Detweiler, Twin Falls, on Governmental Affairs; E. L. Buttner, Oakland, chairman, Don W. Close, Seattle and W. P. Robbins, Salt Lake City, on Research; E. R. Cornish, formerly of Oakland, is secretary and G. H. Sutherland, Portland, and Bert W. Stilles, Denver, on Codes and Standards.

Stop diversion

Legislation to prevent misappropriation of funds by contractors, suggested by the Los Angeles Grand Jury, is being considered by the Construction Industry Legislative Council, on which E. G. Kramm, No. Calif. chapter, NECA, represents the California Conference of NECA Chapters. Electrical contractors have long wanted the contractors state license law tightened to require financial responsibility of generals.

Anti-topple

San Bernardino, with some of the tallest antenna in captivity, has just passed an ordinance to regulate their safe installation. Has teeth in it. Violators can be fined $500, given six months.

New man

Utah-Idaho Chapter of NECA has a new manager. He is Floyd Shipp. Had a trip to the Council on a labor issue to break in on. The chapter got a favorable decision from the Council for a change on a wage issue in Idaho.

Head men

Northwest Line Constructors Chapter, NECA, named E. B. DeFeyter of Spokane as its new president, returned George B. Schetky of Portland as governor; elected Noble W. White, Seattle, vice president and S. E. Lawrence treasurer. Lawrence and White are directors for a two-year term; DeFeyter, Schetky and James E. Stone a one-year term.

Others elected

Oregon-Columbia Chapter, NECA, elected G. H. Sutherland president and governor, J. A. McCoy, vice president, and A. R. Johnson, treasurer. Directors are S. I. Jaggar, W. R. Grasle, L. C. Adams and S. S. Adams in addition to the above. Laurence C. Rodgers is manager of both chapters as well as of the Northwest conference of NECA Chapters. Sutherland was named conference chairman and Les Stewart of Spokane vice chairman at a meeting in late February.

Popular guy

Friends of Fred Benz throughout the West will sorrow at his death from cancer late in February after a long illness. Fred covered the West for U. S. Rubber wire and cable division, then became a manufacturer's representative in San Francisco. He handled the U. S. Rubber and the Smithcraft lines.

Others passed

Ken Cross of Cross Lighting, another well-known old-timer in Los Angeles, died in late January, and Murray Rosenbloom, sales manager for Globe Lighting at one time, later with Acme, died in early February in Los Angeles.

Light on names

Among lighting names lately: Ed L. Peterson has been appointed Day-Brite representative for the San Diego and Southeastern California territory . . . Bob Jones of Sunbeam, who had just been elected a member of the IES Section board of managers in Los Angeles, went to Seattle as manufacturer representative there for Sunbeam. Jake Hockenauer of Benjamin was voted in as his successor on the IES board . . . Wm. Laurence of G-E Supply was named IES local representative for the San Bernardino-Riverside area . . . Ed. Balogh, once with L. A. Dept. of Water & Power, later with Sunbeam, is now with Lou Black & Associates, handles Rambush, Gotham, Luminous Ceilings, Leadlight and Davis dimmer lines . . . Tom McCabe, formerly with an architectural firm is now with Sunbeam . . . Donald D. Scarff succeeded L. R. "Tick" Wilson as manager of Puget Sound Sales district of G-E Lamp in Seattle. Wilson retired Dec. 31 . . . Roy F. E. Bunston of Bunston Ltd., Vancouver, has been appointed to

represent Abolite Lighting division of Jones Metal Products Co. in British Columbia and Alberta . . . Gus Larson has transferred from the lamp to the electronic tube division of Westinghouse in Los Angeles . . . Hal Levy formerly of Globe is now with Nu-Lite . . . Ellis Quimby is now with Supreme—was with Smithcraft.

Distributor

State Electric Supply, of Oakland, has been appointed by Johns-Manville Co., a distributor of its Transite conduit, Korduct and related fittings and is carrying a large stock to serve the Oakland area, says Harry Perl.

New type

Trade-Wind Motor Fans, Inc. of Los Angeles applies the axial flow principle of air movement to the home ventilation field with its new low-cost Jet Stream ventilator. It was introduced to dealers in February. Housing members only 5½ in. permitting installation in restricted joist space.

Made here

A new Flamenol indoor remote control wire is now being made by the Oakland wire and cable plant of G-E construction materials division. It is color-coded the same as G-E remote control devices and prices will be lower than for the older wire.

New lineup

Philip Rive, Vancouver city electrical inspector, has been elected president of the Electrical Inspectors Assn. of B.C. at its annual conference in February. Harry Robertson, inspector, North Vancouver, is vice president; J. R. Walker, inspection department of B. C. government, treasurer, and J. R. Dooley, secretary-manager, Electrical Service League of B. C., secretary.

Take on the old

Remodeling will be featured at the big Home Show in Los Angeles in June at the Pan-Pacific auditorium. Three houses will be displayed, two brand new and one old house to show how it can be remodeled. This Home Show is sponsored and operated by the construction industry of Los Angeles.

Off the press

A model electrical code as recommended by the East Bay uniform electrical code committee, has just been published. This is the work of inspectors and contractors in the East Bay cities of San Francisco area.

Annual meeting

Montana chapter NECA held its annual meeting February 13 in Butte and nominated G. E. Cissel of Livingston as president, Francis Paulson of Kalispell vice president, Price McConnell of Anaconda, secretary, and Don Boedy of Bozeman as treasurer. Charles Simpson, District 8 vice president, attended. The Butte and Missoula contractor groups have signified intention of joining them. Bill Blackmar, chapter manager, resigned to become manager of the new chapter in Southern Colorado for Colorado Springs and Pueblo, initiated by Don Larson, Rocky Mountain chapter manager.

Kept on

Al Myers, who filled the remainder of the term as president of the San Diego chapter NECA when Earl Pridemore resigned, was reelected president for the new year. Al Eddy was elected governor.

Slick cable

Silver Dutrax, a new non-metallic sheathed cable with a smoother, cleaner surface, much easier to pull, has been announced by Anaconda Wire & Cable. The silvery finish will not become sticky even under high temperatures nor flake nor peel under extreme low temperatures. Staining and soiling of the hands are a thing of the past, according to the announcement. It comes in the standard sizes and numbers of conductors.

Opportunity to sell

Electriglas Corp. of Bergenfield, N. J. suggests to contractors that they move in on the Gypsum Assn.'s Add-A-Room promotion to see that adequate wiring is provided and especially to sell electric heating as the means of taking care of the added room without changes in present heating systems. Even where utilities do not invite complete house heating, supplementary heating of this type is welcome.

Cautious now

The Council on Industrial Relations for the electrical contracting industry was conservative in its decisions at the recent meeting in Detroit. Although the Contra Costa county "location of shop or warehouse" case was decided in favor of the union, Fresno union's request for wage increases and paid vacation was turned down. In Monterey, ten cents was given without fringes to bring the scale to $3.10 because San Luis Obispo and Santa Barbara already had that and San Jose $3.19½. Likewise the plumbers in the area were getting more.

Oldest Bridge Becomes Best Lighted

Sellwood Bridge over the Willamette River in Portland is one of the oldest in the city. It was lighted for years by the old lamp posts seen in the accompanying picture. Now these are to be removed and the new luminaires, installed by W. R. Grasle Co., take over.

The installation was made with Line Material Ovalite units with 15,000-lumen, mercury-vapor lamps, spaced at approximately 90-ft centers and operating on a 20-amp series system.

The system was planned and specified by William Brust, electrical engineer for Multnomah County. Brust, who is pictured at right above, has been county electrical engineer for more than 25 years and takes an active interest in IES programs, Electric Club, as well as IBEW Local 48 doings of which he is the oldest active member.

The installation has proved so satisfactory that Brust is planning similar improvements for several other bridges at Portland. It has been called by another old-timer, A. C. McMicken, "the best lighted bridge in this part of the country."

Luminous Ceiling Perfect TV Light

• A LUMINOUS ceiling makes a perfect illumination for a display room showing television sets. This is proved in the new showroom of the Paul H. Rice Co., manufacturer's representative, distributor of radio and television, at Western Merchandise Mart, space 419, San Francisco.

The display room, 20x27 ft, is lighted from thirty-eight 40-w, rapid-start fluorescent lamps on strips, installed by Daylight Ceiling Co. of San Francisco. Eighteen inches below the ceiling is the luminious Lumicel grid of plastic plates. Forty-five foot-candles is maintained at three feet from the floor throughout the entire area.

Commenting on the lighting Paul Rice said: "Because it is so new, few people realize that full ceiling illumination can be installed for little more than ordinary lighting and very few stop to think about the fundamental fact that good lighting can benefit display rooms, offices or stores tenfold over any other one item than can be installed. To everyone's surprise we find that our television sets can be demonstrated in any part of the space without the slightest glare from reflected light sources.

ELECTRICAL WEST

The Change Is Refreshing

AFTER almost twenty years of a philosophy that had become abhorrent to Western farmers, irrigationists and power people, it is refreshing to note the change in the U. S. Bureau of Reclamation. The philosophy that created so much suspicion and opposition was that the USBR should take unto itself an ever-increasing amount of power, authority and dictation over the lives of all who came in contact with it.

The new philosophy was expressed recently by Under-Secretary of Interior Ralph A. Tudor during a Western inspection trip. He summed it up this way:

"The Bureau of Reclamation was and still is one of the finest engineering organizations in the world. It has done much to build up the economy in the West and we propose that it shall continue to this end. We do not propose, however, that it shall be an agency to dominate the philosophic and economic well-being of the West. Rather, we propose that it shall be a cooperating agency with which Western interests can work."

To which everyone can say, "Thank the Lord and amen."

I/TV—Unexploited Field

LAST month we saw a television camera no bigger than the average amateur motion picture camera. It was part of a closed TV system. Its first application was to be in a New Mexico penitentiary to patrol the cell block 24 hours each day. With it one or two men will perform the chores of a score or more. Its makers envisioned unlimited uses in business and industry.

This experience points up one of the great unexploited television fields—I/TV (industrial TV) as contrasted to E/TV (entertainment TV). One needs but little imagination to dream of potential industrial uses that put entertainment TV into the background. Today I/TV helps operate steel mills and other factories. It reads remote dials and gages. It views and controls the smoke from power house chimneys and the fire under boilers. It helps bank clerks verify signatures and it supervises the handling of radioactive materials. And it plays at cops and robbers by guarding precious materials.

But these are only simple beginnings. Coordinated with electronic memory machines it may make knowledge available any place, any time. Joined with microscopes, X-ray machines, analyzing and measuring devices and servomechanisms, its possibilities are almost limitless. It can add many new dimensions to the automation of factories.

Conceivably I/TV can do more for business and industry—and thus indirectly for the American people—than E/TV has done in providing entertainment. It is no further along than E/TV was in its second year. And think what has happened since then!

An Unfair Statement

IN applying the test of ethics, morality and propriety to the charges and countercharges of various members of Congress one can only be guided by what some of the political gentry say. Take the case of Senator Estes Kefauver, who has cried loudly at what he calls "unfair treatment" from his Republican fellows. In a recent address extolling the benefits of a high dam at Hells Canyon and criticizing the Idaho Power Company plan, the Senator said:

"Secretary McKay tried to justify his position by talking about letting the local people do the job. By local people, he obviously meant the Idaho Power Company—a New England concern, headquartered in Maine, having few, if any, stockholders west of the Hudson River."

Few unfairer statements have ever been made by a man in high office about an outstanding business organization, dedicated to the public service and rated a good citizen of every community in which it serves. For the facts—to which Senator Kefauver had access—are these: Sixty per cent of Idaho

EDITORIAL VIEWS

Power's stockholders live in the 11 Western states with 40% actually residents of Idaho and Oregon. Moreover, 55% of the employees are shareholders. Only 15% of the stockholders live in New England. At the time Idaho Power was incorporated, Maine law offered the greatest protection to investors. Today it would take $300,000 to change the corporate domicile. Even so, the company must conform to the corporation requirements of Idaho, Oregon and Nevada, where it operates.

President Tom Roach of Idaho Power called these facts to the attention of the Senator with the result that might have been expected. Nothing happened. Senator Kefauver has no votes to lose in Idaho. Nor will his handling of the "facts" enhance the chances for approval of a high dam at Hells Canyon.

Illogical and Incongruous

FOR a business as sensitive to the impact of weather as the public utilities to place almost absolute reliance upon government services for fundamental weather information seems illogical and incongruous. Yet few utilities throughout the country have their own technically competent meteorologists. Some do patronize private consultants, but few maintain meteorological departments consistent with the importance of weather to present-day utility operations. As pointed out elsewhere in this issue accurate, scientific weather observations and forecasts can facilitate operations, assist in engineering design and can save money for utilities. The range of usefulness of such information stretches from planning coordination of steam and water power and from mobilizing manpower for emergencies, to the measurement of potential watershed resources and even adding to such resources by skillful cloud seeding. We expect to see the day when every utility of any consequence has its own competent and technically staffed weather bureau.

IN the course of realizing the enormous future I see for our industry, the road will be beset with many problems—serious problems. But no matter how difficult these problems may seem, there are few, if any, that human brains cannot lick. So of all the problems to be found in analyzing the outlook for power, the major one confronting the industry is to get these brains and to develop, motivate and utilize them. How is the industry—or the particular company we are examining—fixed for manpower? What are the means employed to insure good recruitment and selecting of new manpower, old and young? How well does the particular company handle the appraisal and development of its executives, present and prospective? How are the educational and development programs within the company? How well is it practicing rotation of assignment for broadening its people and getting new viewpoints at work on its old problems? How well does it recognize management as a competence separate from technical or professional competence? How actively do its people participate in management, professional, technical and industry associations? How well is it utilizing opportunities for development outside the company? How many of its people does it send to advanced programs at universities, for example? How well does the particular company utilize the opportunities of developing its people through community and civic activities? Here lies both an opportunity and an obligation. How does the particular company measure up? These are only a few of the questions one needs answers to in the field of people, and there are many more—important ones. But it's a good starting point. — Elmer L. Lindseth, president, The Cleveland Electric Illuminating Company.

PANORAMA OF THE PCEA

Air Conditioners Under Scrutiny

PCEA's newest committee, the air conditioning and room cooler committee, is off to a flying start in its work to solve some of the problems arising from the increased and widespread interest in room coolers. Chairman Henry C. Rice has announced the appointment of the following committee members: B. F. Sexauer, Coast Counties Gas & Electric Co., Santa Cruz; J. S. C. Ross, Pacific Gas and Electric Co., San Francisco; Karl K. McGowen, California Electric Power Co., Riverside; E. W. Meise, San Diego Gas & Electric Co.; Les Waggoner, Arizona Public Service Co., Phoenix; D. J. Slack, General Electric Co., Los Angeles; Frank W. Jordan, Westinghouse Electric Corp., San Francisco; Fred C. Stevenson, Philco Corp., San Francisco; Richard J. Petersen, Utility Appliance Corp., Los Angeles; Ray N. Smallcomb, electrical contractor, Los Angeles; L. Roy Moser, electrical contractor, San Francisco; and Earle D. Thorburn, Sierra Pacific Power Co., Reno.

First meeting of the committee was held in Los Angeles on Feb. 19. Chairman Rice outlined the purpose of the committee, which is chiefly to study and recommend solutions to problems resulting from the phenomenal growth in the air conditioning and room cooler fields. He pointed out that, regardless of the different points of view of manufacturers, distributors and electric utilities, there is a mutuality of interest in the sale of these appliances — customer satisfaction. He called attention to the fact that room coolers frequently have been represented as plug-in devices although most existing circuits in homes and offices are loaded to such an extent that they cannot serve the coolers properly.

Rice also said that the high starting demand of the motors, compared with their relatively low running demand, creates another problem. Some special controls or method must be worked out, which will prevent all the air conditioners and room coolers on a circuit from hitting the line with their full starting load simultaneously after an outage.

After a full discussion of these problems, the committee reached the following conclusions:

1. A study should be made to establish general agreement on a breaking point between 120-v and 240-v units by all members of the industry. For example, if the study reveals that ¾-hp units will not operate efficiently when installed on 120-v circuits, the industry-wide practice should be to recommend that all units exceeding ½ hp be designed for 240-v service.

2. Research and study must be made on the type of controls with which to equip air conditioners and room coolers, starting capacitors, running capacitors, no-voltage releases or any combination of these, to solve the power factor and starting load problem.

3. It was decided that there is a great need for public and industry education on the subject of room coolers. The committee agreed that manufacturers and distributors should educate more adequately dealers and installing contractors on the requirements of these appliances. It was recommended also that the utilities' job should be to publish articles in house organs, literature for the general public and trade papers to correct the many mistaken ideas currently encountered about room coolers.

It must be emphasized, the committee believes, that most room coolers are not plug-in devices and that customers must buy adequate machines to do the job even though it means additional wiring. To illustrate, it was pointed out that some dealers have sold room coolers that are too small for the customer's needs, thinking they were saving a customer the necessity of a 240-v wiring job. But the only result of such a sale is customer dissatisfaction. If a room cooler is needed, the proper size machine *must* be sold. The principle involved is "Don't sell a small rug when the customer needs wall-to-wall carpeting." It must be emphasized also that a room cooler cannot be used to cool a whole house.

4. As a result of the meeting Chairman Rice will get in touch with NEMA, EEI and other interested organizations to determine what they are doing about room cooler problems and how much and what kind of information on the subject is being published.

5. The next meeting of the committee, to check progress of the work being done and to air any problems that may come up, will be held in about two months.

A subcommittee was appointed to study Nos. 1 and 2 above. It consists of Chairman J. S. C. Ross, with Jordan, Moser, Waggoner, Stevenson and Walter Abraham of PG and E.

The work of the air conditioning and room cooler committee is especially important. Industry-wide cooperation in this field will result in high standards and installation requirements that will provide maximum safety, efficiency and the most satisfactory operation for customers.

NCEB—Wholesalers

Wholesaler salesmen of the San Francisco Bay region, some 150 of them, were given a rousing 1954 send-off toward selling at a special meeting called by the Northern California Electrical Bureau on behalf of its wholesaler members, Jan. 26, at the Bohemian Club, San Francisco. It was the first meeting of its kind and so practical and stimulating that others like it are contemplated.

Three subjects only were on the agenda—the financial situation, the wiring situation and the cut price situation. LeRoy H. Bennett, bureau manager, and "Duke" Imhoff, Electric Corp. and distributor association chairman, developed the realistic program. Only salesmen from the electric supply distributors in the area were invited.

Louis J. Murphy, assistant vice-president of installment accounts of Bank of America, gave the real facts on the financial outlook, predicting a million homes would be built in 1954, although at perhaps lower-bracket levels, meaning less wiring and electrical facilities. He concluded with instruction on how the FHA title 1 loan can be used to finance the much needed rewiring.

W. A. Cyr, associate editor, ELECTRICAL WEST, brought all up to date on the success of the adequate wiring television spot advertising program sponsored by the bureau and its members, indicating a real need now being felt by the public to do something about rewiring. He urged guidance to contractors to follow up the leads thus uncovered.

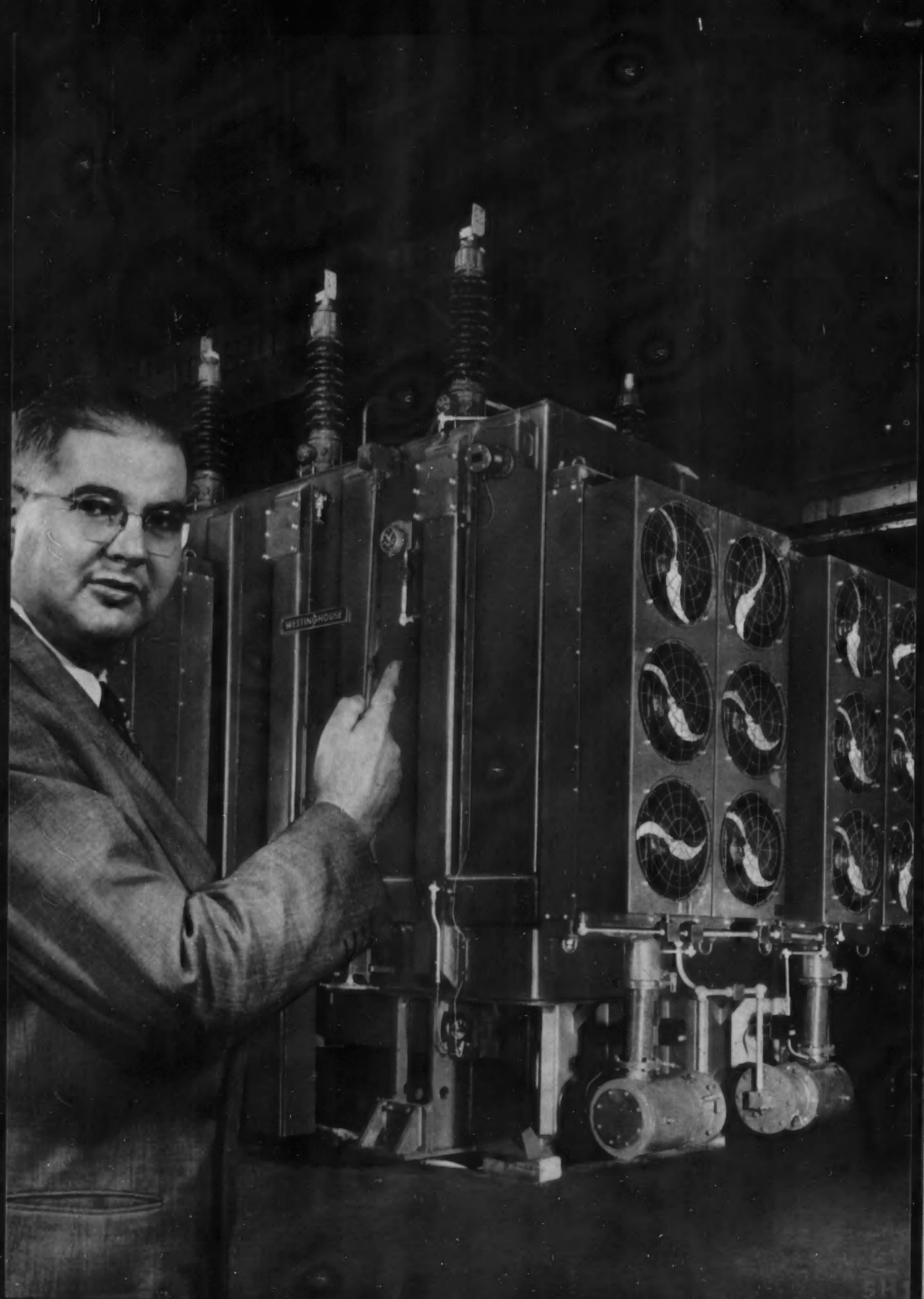
A. H. Gudie, president, Biddle Trade Bureau, Los Angeles, gave a most penetrating talk into the price cutting mania now prevalent, its causes, consequences and cure.

"What do you do when you cut price?" he asked. "You tell the manufacturer the service you perform for him is not worth as much as he wanted to pay."

M. L. Gardner, Westinghouse Engineering and Service Manager, Northeastern Region, introduces a panel of Westinghouse engineers who will discuss ways of . . .

Reducing your system operating headaches

To many utility people, Matt Gardner is "Mr. Westinghouse." In 30 years of distinguished service, he has been associated with practically every phase of electric utility engineering—research, development, application, service. On the following eleven pages, Matt and other top Westinghouse engineers will show you how quality-engineered equipment can solve or simplify system operating problems.


WESTINGHOUSE

"John Rissinger, Manager of Power Transformer Sales, points out how . . ."

TRO and SP relays minimize transformer operating problems

The TRO relay which for years has enabled you to load your transformers to the limit of their thermal capability is now equipped with a dial calibrated in percent thermal load. This gives your operator direct visual evidence of the thermal condition of your unit, based, as in the past, on a combination of transformer load, oil temperature, ambient temperature and prior load conditions. Three contacts are retained and may be used to control auxiliary cooling, light warning lamps or trip a breaker.

The SP relay provides the operator with the long-sought answer to the problem of detecting transformer faults before extensive damage results.

Mounted on the side of the tank opposite the gas space, the new relay is designed for alarm-trip circuit closing on the occurrence of an internal fault producing an abnormal pressure rise. It will detect rates of change even smaller than two ounces per square inch per second. For steep-front increases of 40 pounds per square inch per second, it will operate in ½ cycle.

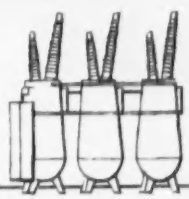
Disturbances such as inrush current, short circuits, impulse voltages or mechanical shock will not actuate the relay.

With these and many other equally important design features, you can be sure that Westinghouse power transformers will reduce your operating and maintenance headaches.

TRO thermal relay

Sudden pressure relay

The next page shows how Westinghouse breaker mechanisms solve a problem for you, too.

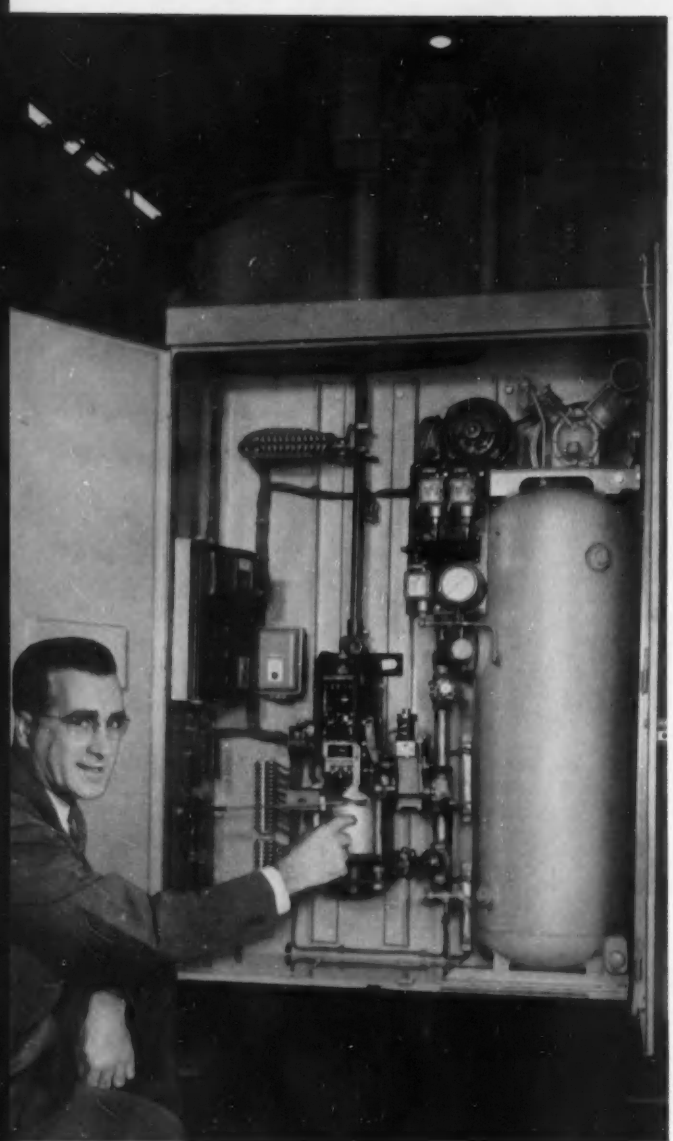


YOU CAN BE **SURE**... IF IT'S

Westinghouse

"Here's Jack Stirling, Power Circuit Breaker Sales Manager, with the answer to the problem of operating high-voltage circuit breakers."

Pneumatic mechanisms offer high-speed, trip-free operation . . .



Today's high-voltage, high-capacity breakers require not only a powerful closing mechanism, but one that is mechanically trip-free for fast action under any conditions—3-cycle opening, 15 to 20-cycle reclosing. And yet one that is simple, accessible and easy to maintain.

The Westinghouse Type AA mechanisms are daily meeting these basic needs—powerfully closing the largest breakers, even on faulted lines —opening mechanically trip-free, without delays—reclosing in the shortest time.

Mechanically trip-free operation insures unretarded, high-speed opening of the breaker even when closed in on a fault. A pneumatic trip selector, however, provides for ultra-high-speed reclosing. Tripping "non-trip-free" only when no compressed air is in the cylinder, the contact travel is smoothly reversed before the end of the opening stroke by the early admission of compressed air into the cylinder. This, first, cushions the opening and, second, recloses without the contacts or breaker parts moving at excessive speeds. There is no shock or hammering of oppositely moving parts, since the piston and contacts are tied together and move in the same direction during the complete operation.

Westinghouse pneumatic mechanisms utilize low air pressure with time-proven pressure accessories.

Corrosion-resisting metals are used throughout, and exclusive roller bearing latches—*not* custom fitted—require no field adjustment for life.

These outstanding mechanisms are available on the complete range of Westinghouse oil circuit breakers from 14.4 kv, 500,000 kva through 330 kv, 25,000,000 kva.

YOU CAN BE **SURE**...IF IT'S

"Al Cleveland of Voltage Regulator Sales points out two good reasons why Westinghouse induction voltage regulators help reduce your operating headaches."

No "contact bounce" frees this regulator from contact wear

When you compare the operating and maintenance characteristics of voltage regulators—almost everyone agrees on the superiority of an induction regulator in those applications requiring high frequency of operation.

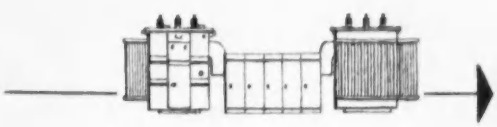
The new Westinghouse Type SU improves on the average induction regulator by an exclusive "no bounce" contact design common to its motor-operating and voltage-regulating relays. No bouncing means no arcing—no contact wear.

The design, through a spring hinge, eliminates all bearings and pivot points. In a recent laboratory test, over 100 million operations (more operations than 200 years of typical field service) failed to produce hinge fatigue or contact wear. The original calibration remained unchanged.

In addition, the all-electric control panel on the SU regulator simplifies operation. All adjustments are made by simply turning the knobs on the convenient control panel. No tools are necessary.

On an application requiring frequent voltage corrections, you can't beat a Westinghouse Type SU induction regulator for fast, smooth operation—at greatly reduced maintenance.

For substantial evidence that Westinghouse unit substations are unmatched in the industry, turn the page.



Westinghouse

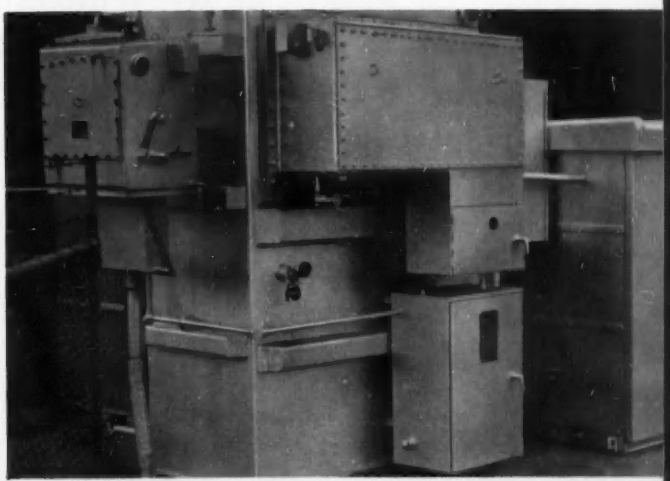
"Here's Wally Payne with some specific reasons why his unit substations can reduce operating problems."*

Westinghouse unit substations simplify station conversion . . . operation . . . maintenance

Today, many utilities reduce the magnitude of their system operating problems by dividing areas into smaller blocks of power. They report that unit substations make the conversion easy, as well as simplifying station maintenance. Too, compactness and flexibility reduce both cost and effort of keeping pace with load shifts.

But even more, advantages of Westinghouse unit substations go several steps further to relieve operating headaches. For example:

The transformer-mounted, underload tap changer, with its direct connected mechanical drive, eliminates springs, latches and shock absorbing devices, thus achieving a positive, reliable, quiet drive having a small number of parts with resulting low maintenance.



Underload tap changer

Drawout "De-ion®" air breakers operate on an exclusive arc-quenching principle that lengthens contact life, reduces maintenance. The drawout feature makes quick inspection easy, completely safe.

All-weather undercoating of all compartments—not just the transformer—provides extra weather protection as a standard feature.

All compartments undercoated

Unit responsibility. Westinghouse unit substations have *all* components engineered and coordinated by one manufacturer with complete control of design, manufacturing and assembly. Westinghouse components are built . . . not adapted . . . for their ultimate job.

Westinghouse has long been a designer and manufacturer of a complete line of power distribution apparatus for any system requirement. The men and organization to make this experience available to you are as near as your telephone. They're ready and anxious to serve.

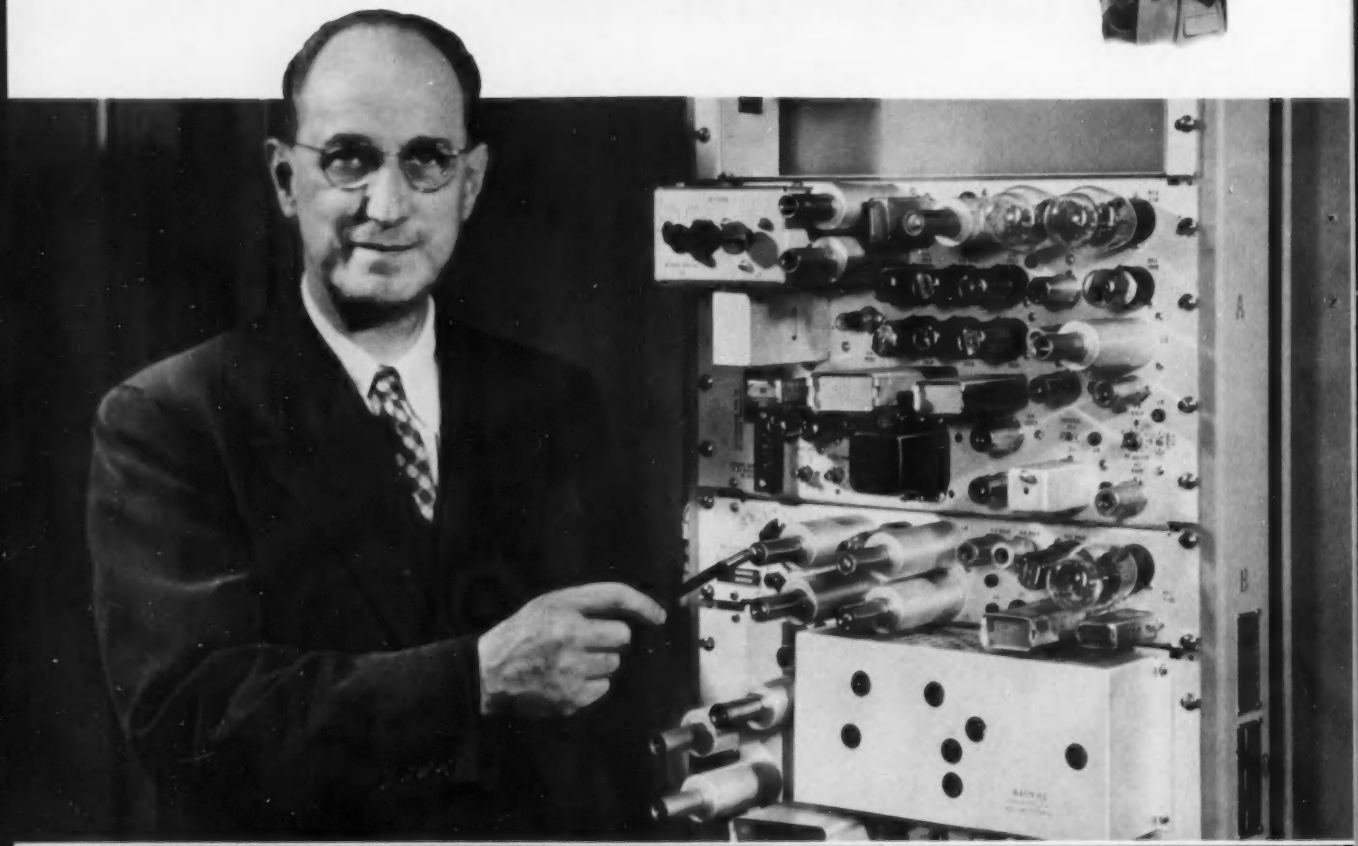
**Manager of Unit Equipment Sales.*

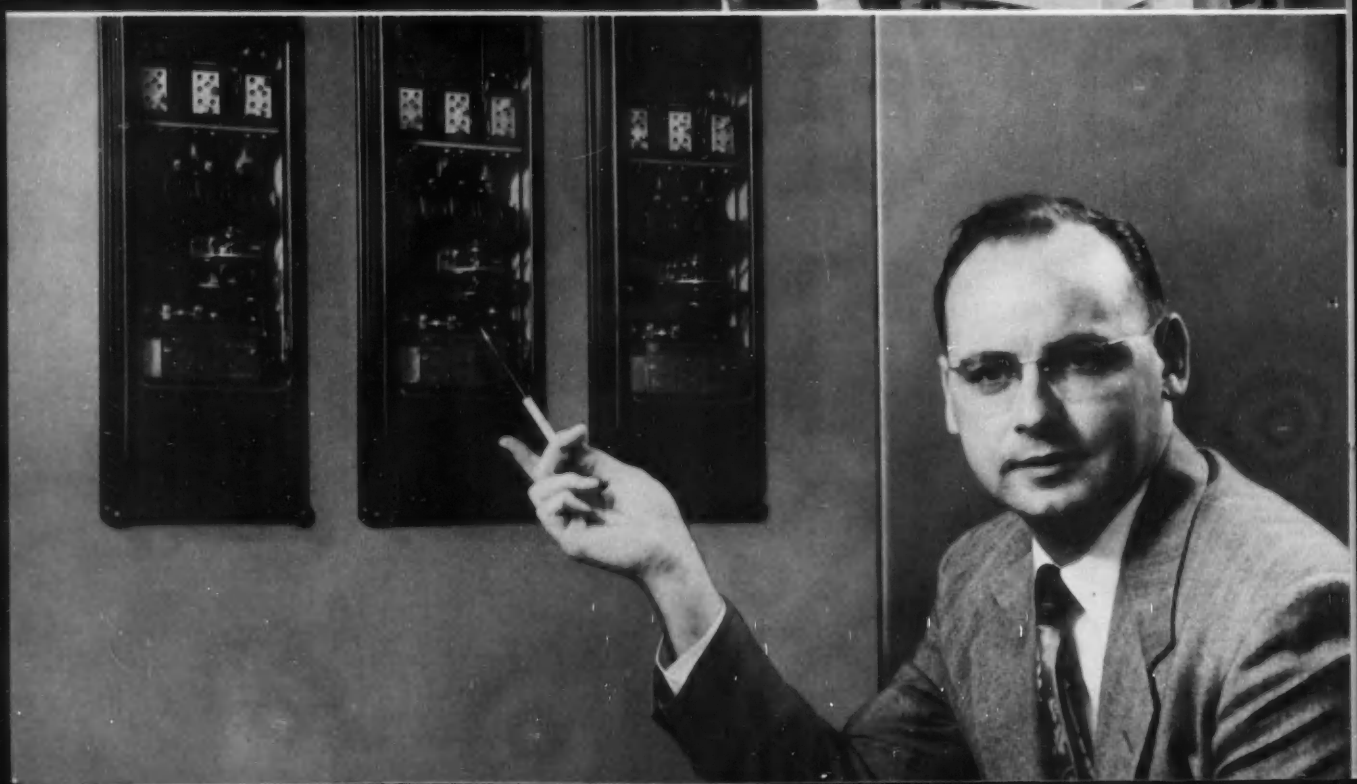
The next pages show how a versatile relay avoids unnecessary trip-out.

YOU CAN BE **SURE**... IF IT'S

Westinghouse

"Power line carrier equipment and relays work hand in hand to give you system stability," say Jim Booth, Carrier Engineer and Bill Rich, Relay Engineer."





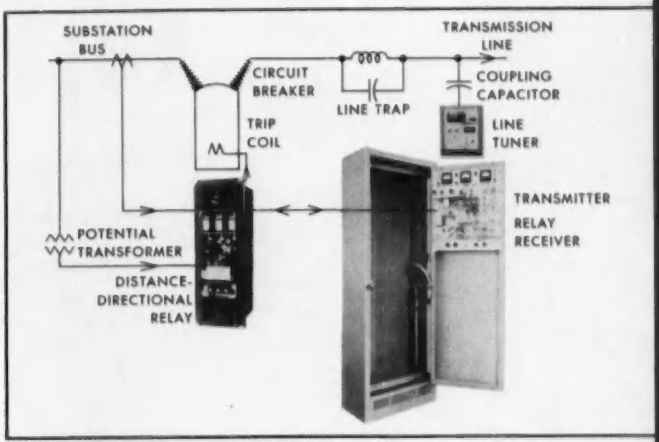
Smooth coordination of Westinghouse relays and carrier minimizes line disturbances

For full protection of key high-voltage transmission lines, it is good business to specify Westinghouse Type HZM relays and Type FD power line carrier as the relaying channel. Working together, this equipment permits simultaneous tripping and reclosing—over 100% of each protected line section —without time delay.

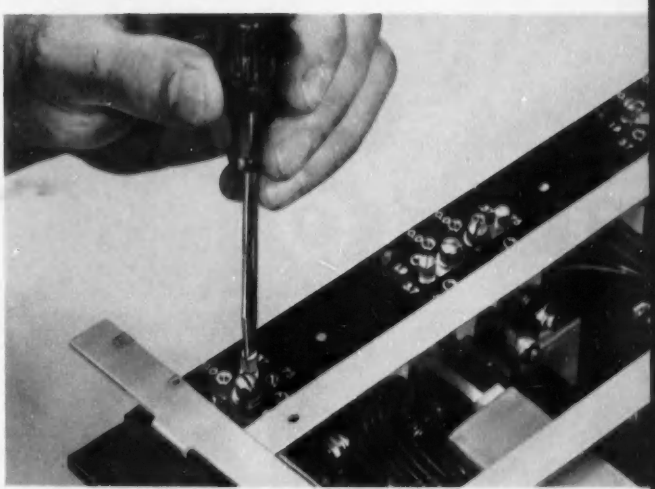
HZM relays alone provide instantaneous protection for 80 to 90% of the line section. Type FD carrier extends this protection to critical end zones for complete coverage. HZM relays and FD carrier are carefully coordinated to operate together smoothly, efficiently.

Type FD carrier is new, and has many outstanding features. Superselective receivers, for instance, provide more usable channels within the 40 to 200-kilocycle frequency range. Built-in automatic current regulators—used in carrier for the first time—assure maximum tube life and reliability. FD carrier operates through circuits having as much as 40 decibels attenuation, affording a large safety factor for changing line conditions. A new, wide-range sleet detector checks the entire carrier channel including vacuum tubes and other carrier components. FD carrier is also available in assemblies for telemetering, supervisory control, voice communications and other functions.

The HZM relay is extremely fast acting—operating in less than three cycles. Fundamentally, impedance relays do not operate on loads or synchronizing surges, even though they may be greater than fault currents that *do* trip the relay. In the HZM relay, this feature is extended even further by offsetting the operating characteristics of any or all of the three impedance elements, as required. Westinghouse also makes the HZ-4 relay in which only the third element can be offset.



A basic distance-directional relaying system, using indoor-mounted Westinghouse Type FD carrier and Type HZM relays.

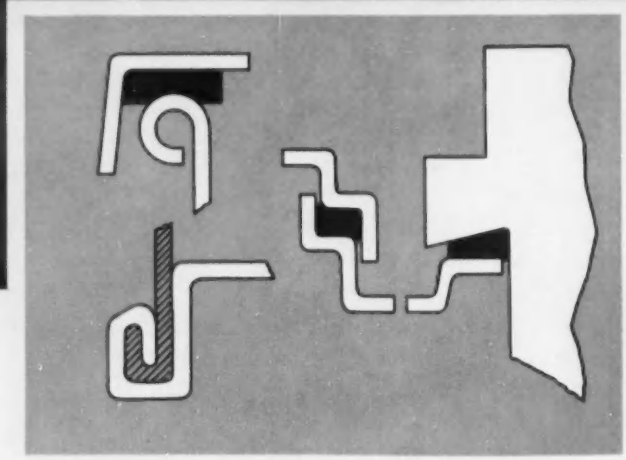


The network for offsetting the impedance circle of the HZM relay is now built in—no auxiliary box is required.

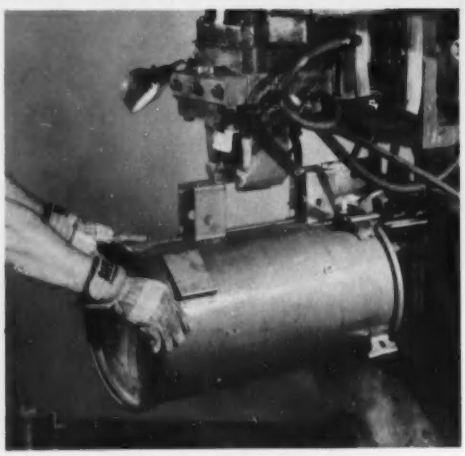
You'll see how special construction solves transformer operating problems on the next page.

YOU CAN BE **SURE**...IF IT'S

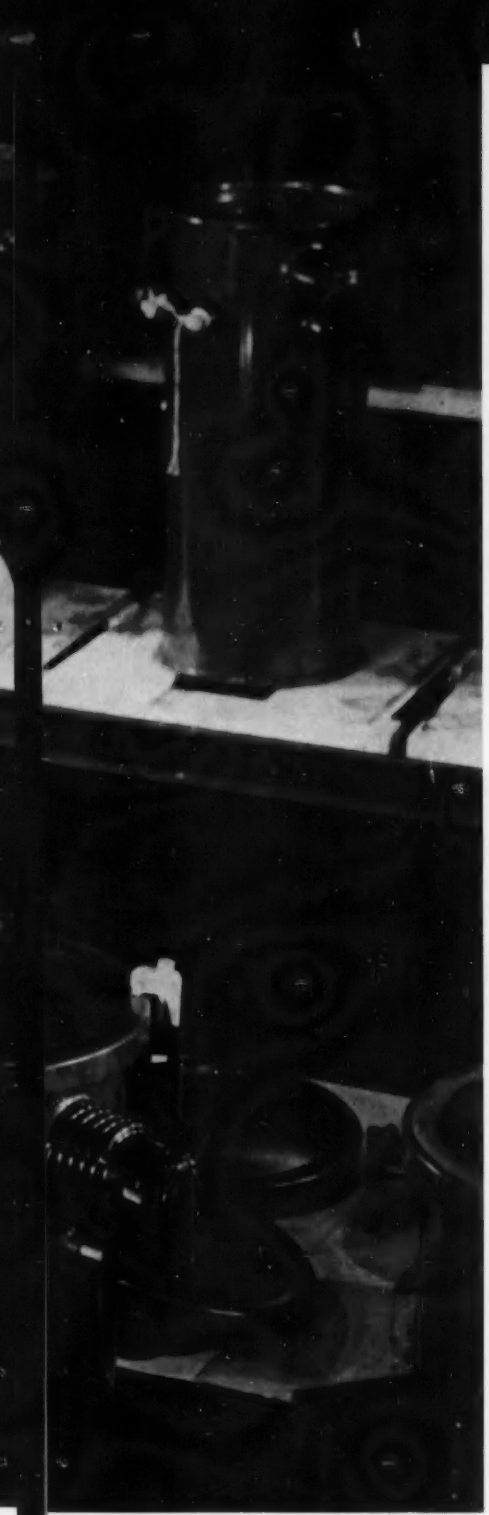
Westinghouse



Double-rolled tank bottom assures positive oil-tight seal and protection against damage in handling. Main and handhole covers are sealed by cork-neoprene gaskets, firmly positioned to assure tightest possible seal.



Hanger lugs, nameplate bracket, lifting lugs and other accessories are projection welded to the tank wall. The security of all welded joints is tested by air pressure at 20 pounds per square inch.



"W. L. McKeithan, Section Manager, Distribution Transformer Engineering, discusses a transformer feature that plays an important part in eliminating operating headaches."

This triple-sealed distribution transformer design eliminates possible trouble

All Westinghouse distribution transformer tanks are made of highest quality steel with positive seals—at the tank bottom—at the cover—and at all accessory locations.

Exclusive rolled tank bottoms have oil-tight, double-rolled rims. Since the design prohibits the transformer weight from ever stressing the seal, the transformer can be stored, moved, loaded or installed without the extra care required by common designs.

Covers, handhole and bushings are sealed with cork-neoprene gaskets. Cork-neoprene is impervious to oil, moisture and corrosive elements—will not take a permanent set—is not subject to aging, stress cracking and has no seam. It assures a positive seal for the life of the transformer.

Hanger lugs, nameplate bracket, lifting lugs and other accessories are projection welded to the tank wall. The security of all joints is tested by air pressure at 20 pounds per square inch.

Triple-sealed tank construction is just one of the several features of Westinghouse distribution transformers that add up to less operating headaches at a vital point in your distribution system. It will pay you to investigate further.

How to get optimum performance from all of this equipment is discussed on the next page.

YOU CAN BE **SURE**...IF IT'S

Westinghouse

Westinghouse field engineers lick operating problems before they start. M. L. Gardner, Engineering and Service Manager, Northeastern Region, cites a typical case:

How Westinghouse helped the Astoria Station get off to a fast, smooth start

"It takes time and teamwork to get a new generating station like Consolidated Edison's Astoria on the line and running smoothly.

"Under my supervision, Joe Greenbaum—the Westinghouse field engineer assigned to Con Ed—lived with this job right from ground breaking. Westinghouse supplied four 100,000-kva generator transformers, station auxiliary switchgear, main control board and powerhouse auxiliary motors. We were there to help supervise erection, installation, connection and check-out of Westinghouse apparatus. We worked closely with Con Ed engineers to tie all equipment together into a smoothly functioning operation.

"We were all pleased when Astoria went on the line and, what's more, we'll help keep it that way by frequent inspection and servicing of all Westinghouse equipment."

* * *

M. L. Gardner's story proves this point: the best performance results only when quality apparatus is matched with quality field engineering service.

Over 1200 Westinghouse district engineering and service men make sure that *you get the performance you buy* in every piece of Westinghouse apparatus. It's a service that frequently makes the difference between Westinghouse and other equipment, *all the difference in the world!*

For further details, go over this check list with your local Westinghouse representative . . . or we'll gladly mail specific data on written request to Westinghouse Electric Corporation, 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pennsylvania.

Distribution Transformers	DB 46-1005	Carrier-Microwave	B-5873
Power Transformers	B-4142A	Relays	DB 41-412
Power Breakers	DB 33-125 and B-5904	Unit Substations	B-4061, B-5306, DB 47-410

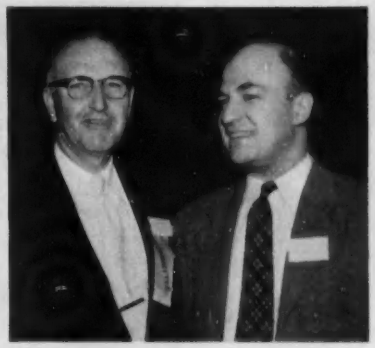
YOU CAN BE SURE...IF IT'S

Westinghouse

CP-1014

Grayson Rickey

Bateman Plummer



Baxter Radin

Public Power Group Fights Inroads

Public power, as represented by the American Public Power Assn., is vigorously opposing tax proposals aimed at it and efforts of the private utilities to have the preference clause modified. These and other attempts to hamstring public power were discussed by Alex Radin, general manager, APPA, Washington, D. C., in speaking before the annual conference of the California Municipal Utilities Assn., held at Riverside, Feb. 2-5.

He said the tax on municipal bonds proposed by EEI would increase the cost of money 50% to municipal utilities and that the tax on revenue would affect financing and revenue going to city functions. The tax proposal is being opposed on the grounds that it is unconstitutional for one governmental body to tax another and, moreover, that the tax is bad policy. One of the major objectives of APPA is to protect the preference clause, said Radin. Further, APPA is fighting restrictive changes in federal power marketing policy and public power is demanding that local agencies share equally with private industry in the development of atomic power.

Engineers who attended the meeting were briefed on the problems of aluminum conductor and fittings and serving three-phase loads in residential areas. Everett A. Kappenman Jr., Sacramento Municipal Utility District, said he believes manufacturers now have solved the connector problem. In reviewing several years' experience with aluminum, he said that no really serious problems have arisen. Linemen got used to aluminum and there are no more gripes.

Serving three-phase air conditioning loads in residential areas is a national problem, stated Floyd Goss, Los Angeles Department of Water & Power. He asked for an expression of opinion on the matter of policy. Should the utility serve the expected large air conditioning load at three phase or insist on single phase for the 3-, 5- and 7½-hp motors required? It was the consensus of those municipal utilities represented that they should not put up barriers to any new residential load but should give the customer what he wants.

That having been decided, Goss next asked for discussion on the best method of serving three phase. Should we use six wires, open delta four-wire, or 120/208 wye? Full discussion soon developed the general opinion that four-wire open delta was decidedly preferable. On the matter of one vs two meters and a compensatory rate, this engineering group got into deep water and decided that commercial departments would have to solve these problems.

So much interest having been expressed on this subject, a representative of Electrical West who was present said that his magazine would secure an article from an Arizona utility detailing its policy and experience. This article will be published in the May issue.

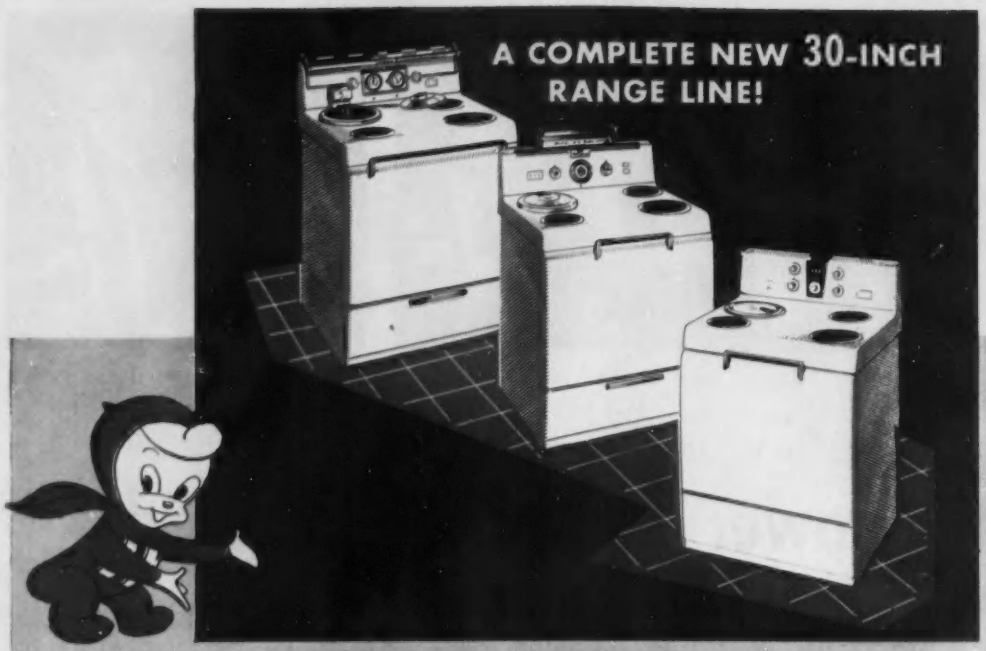
In general sessions topics ranged from the economic outlook to policy matters affecting municipal water and electric utilities. Clark Galloway, State Chamber of Commerce, said that because of California's diversified economy the outlook was only a slight decrease in business below the peak postwar year of 1953. With an increase in population of 500,000 a year, which means more homes and more jobs, with a $6 billion backlog in the aircraft industries and with only a 6% drop expected in home building, the outlook was most favorable.

Easements and rights-of-way should be recorded for protection against legal action, said Ford Hendricks, attorney, California Division of Highways, and containment of a nonbuilding clause is important. There are many complex problems in deciding whether to provide municipal utility services in fringe areas outside city limits, stated Aaron W. Reese, deputy city attorney, San Diego, in discussing fringe area service obligations. One question is the legality of a municipality to serve these areas, he said. If services are extended the city assumes greater liability. Another problem is the matter of rates, so that city customers will not have to stand the higher costs. The whole question is primarily a policy matter considering the possibility of annexation, the desirability of controlling substandardization and good community relations, Reese said.

Take care of frequency and severity will take care of itself, said Douglas A. Campbell, referee, California Accident Commission, on the subject "Who's at Fault?" Severity is only a matter of chance, he said. Campbell provided a wealth of good advice on safety practices, responsibility and legal phases.

James L. Beede, attorney, Los Angeles, said that today revenue bonds have become an accepted means of financing the expansion of municipally owned utilities. In working out a good revenue bond it is essential that the resources and needs of the utility be studied carefully. Each bond issue must be tailored to fit the utility and also to fit the market, he said.

Public relations at the point of contact was discussed by George C. Sopp,



Hotpoint

Opens New Fields of Utility Revenue with a Complete, New 30-inch Range Line

Already recognized as the leader in the appliance business, Hotpoint scores *another* first with the complete, feature-packed Super-30 Range line. This new Super-30 line will add countless new customers to utility lines.

Now the many families who liked the idea of a smaller electric range can buy one without sacrificing the wonderful de luxe features which make electric ranges so desirable. This, plus the fact that Hotpoint's Super-30 line offers a range to suit every family budget, means that utility revenues will be greatly increased.

Skillful engineering has enabled Hotpoint to turn out Super-30's with all the features of full-sized ranges. There is a de luxe feature for every one of the compact 30 inches. For instance . . . the Rota-Grill for country-style barbecuing, Deep-Well Thrift Cooker, Lighted Pushbuttons, and many others.

Have your Hotpoint distributor give you the facts on the complete Super-30 line. Learn today's opportunities for sales PLUS the future utility revenue which will result from this new Hotpoint line.

Again Hotpoint *looks at Tomorrow, Today*

HOTPOINT Co. (A Division of General Electric Company) 5600 West Taylor Street, Chicago 44, Illinois

Frey Wade

Kennedy Allen

Goodrich Foy

Los Angeles Department of Water & Power, and Fay V. Frey, Light & Power Department, Pasadena. Sopp said public relations cannot be separated from good management because sound public relations is a direct reflection of the management. The importance of good customer service within the office was emphasized by Frey. Drive-in pay stations, discontinuance of requiring deposits, good employee training, good management policy, and employee contact with customers at the desk and over the telephone—all contribute to good public relations, Frey said.

In an inspiring luncheon address, Nelson S. Dilworth, senator, Riverside County, said: "You can't pay for freedom, but you can keep up the installment payments daily and monthly so it will not be repossessed and taken away from us."

At a closing business session all officers and directors were re-elected for another year. These included Lauren W. Grayson, president; Carl Richey, vice-president; F. V. Frey, secretary; and G. A. Baxter, treasurer. Among resolutions passed were: one reaffirming the position of the association that the Arizona Project is not economically feasible; another, placing the association on record urging that the preference clause be continued; and a third stating that extra tax exemptions be continued on municipal bonds.

The well arranged program was under the chairmanship of Carl Richey, Sacramento, with Clayton M. Allen, Los Angeles, as co-chairman. Sacramento was chosen as the site for the next annual conference to be held Feb. 22-25, 1955. The Riverside meeting chalked up a registration of 225, largest in the past 22 years.

IAEL

Taking advantage of market week, the managers of electrical leagues (IAEL) in the West held a day-long session at the conference room of Northern California Electrical Bureau, San Francisco, Feb. 11, called by Glen Logan, manager, Electric League of Los Angeles, chairman for the Western division of IAEL. Present were William Johnson, Appliance Merchandisers Assn., Phoenix; J. Clark Chamberlain, Bureau of Home Appliances, San Diego; Logan; V. W. Hartley, Pacific Coast Electrical Assn.; LeRoy H. Bennett, Northern California Electrical Bureau; James Schricker, Intermountain Electrical Assn., Salt Lake City. The topics discussed ranged through the full scale of league activities, beginning with and always coming back to stumble over inadequate wiring. Ideas for promotions and programs were interchanged and coordinated.

Members of the Western group, EERA, at the Los Angeles meeting: left to right, seated, Earl S. Condon, Los Angeles, George Honn, San Francisco, H. J. Randolph, Los Angeles; standing, Fred Carlson, Seattle, Bob Ingalls, San Francisco, Ash Davis, Los Angeles, Don Ingalls, San Francisco, Howard Peterson, Denver

Manufacturer Representatives Meet in L. A.

Twenty-five members of the Electrical Equipment Representatives Assn. (EERA) met in Los Angeles Feb. 9-11 for the annual meeting of that organization, the second to be held in the Far West. Many subjects of interest to representatives and their principals featured the program including market surveys, estate planning, material handling, office practices and insurance coverage.

Earl S. Condon of the Earl S. Condon Co., Los Angeles, was succeeded as president by Richard A. Kemp, Richard A. Kemp Co., New York City. H. J. Randolph of Los Angeles headed up an entertainment committee that provided a varied program for the association members and their wives.

THE MONTH IN BRIEF

Condemnation Goes to Jury

Jury trial to determine value of Washington Water Power Co. properties in Chelan County was set to begin May 24. Judge J. A. Adams of Wenatchee set the date after the state supreme court rejected a WWP plea that Chelan PUD's certificate of necessity was no longer valid because the district had expanded its generating facilities by the Rock Island addition. WWP values its Chelan generating plant at about $10,000,000 and has fought to eliminate it from the condemnation proceedings, which were started in November 1945. Chelan school board has estimated that it may lose $20,000 annually in tax revenue (a $500 cut for every teacher) if the PUD takes over the power plant. Taxable valuation of the WWP property at Chelan is $2,500,000, or 25% of the total tax base of the school board district. Current revenue from that source is about $40,000.

Co-op Votes Rate Increase

Colorado's largest cooperative, Southeastern Colorado Power Assn., has voted a 15% blanket rate increase, effective March 1. The co-op buys power from Southern Colorado Power Co. and municipal plants at Lamar, La Junta and Trinidad. Its power costs in 1952 averaged 10.8 mills per kw and in 1953 10.9 mills per kw.

New Rate Schedules for Fort Peck

Rate schedules for Fort Peck power, effective Feb. 1, modify former schedules approved by FPC in 1945 and 1949. Principal change is substitution of a graduated minimum annual capacity charge for a minimum monthly bill. Under the new rates minimum capacity charge for the first 12 full billing periods is $7.20 per kw of 80% of the contract rate of delivery; for the second 12 full billing periods it is $7.20 per kw of 90% of the contract rate of delivery and for subsequent billing periods $7.20 per kw of 100% of the contract rate of delivery.

Water Prospects Reported

January precipitation in most areas of the upper Columbia basin exceeded 175% of the 1942-1951 average, according to a report released by the U. S. Weather Bureau and Soil Conservation Service. Southwest prospects are less bright, although a heavy mid-February storm in California alleviated to a great extent fears of water shortages in some areas of that state. A light to nonexistent snowpack on Salt River watersheds in northern Arizona indicates the spring runoff will be one of the lightest on record.

Governors Making Study

Meeting in Portland last month with the Columbia Basin Interagency Committee, the newly formed Northwest Governors Power Policy Committee decided to fight for restoration of construction funds for The Dalles and Chief Joseph projects. The governors committee will present engineering studies to President Eisenhower on April 26 and will meet previously in Victoria. Portland was voted headquarters for the first six months of 1954. W. Jack Mosley, Portland, a member of the coordinating group of the Northwest Power Pool, was named full-time chief engineer.

BPA Fiscal Budget Presented

Completion of high-voltage transmission lines, new substations and related facilities already approved by Congress or under way, will take up the major portion of Bonneville's $30,200,000 fiscal 1955 construction budget proposals asked by Administrator William A. Pearl. Operations and maintenance requests total $6,600,000. He said that funds asked reflect the fact that very few major grid additions will be required until new starts on federal dams are approved and construction funds appropriated. Funds requested for this activity were reduced $8,666,000 from the current fiscal year's appropriation. The operations-maintenance request is $596,000 above the amounts voted BPA by the first session of the 83rd Congress because of increased operating costs and deferred maintenance requirements. Power marketing and general administrative expenditures will be reduced for fiscal 1955 as a result of reorganization and revision of functions not in accord with current Interior policies, Pearl said.

NPPA Refiles Protest

Northwest Public Power Assn. has refiled its protest to FPC on McNary Dam cost allocations to power. The commission had refused the group's initial petitions on grounds that it was proceeding under authority of the River and Harbors Act of 1945 and the Bonneville Act, which make no provision for intervention on cost allocations. However NPPA says that its bid for intervention was based on the Administrative Procedure Act, which, it declares, guarantees affected parties a hearing.

Underwater Cable to Link System

B. C. Electric has awarded contract for a submarine power cable linking its Vancouver Island and mainland systems. The $3,000,000 contract was won by British Insulated Callender's Cables Ltd. of London. Scheduled for operation in 1956, the installation will transmit electricity underwater at a higher voltage and at a higher carrying capacity than any other similar installation in the world, according to company officials. Continuous lengths of cable each approximately 17 miles will be laid at depths of up to 600 ft. Four single-core, 138,000-v cables will be required, three for normal operation and one for spare. The cable will be of the gas-pressure type and will weigh more than 3,000 tons. The line will have a capacity of 120,000 kva. The B. C. Power Commission's John Hart development, now serving northern Vancouver Island, has a capacity of 150,000 kva.

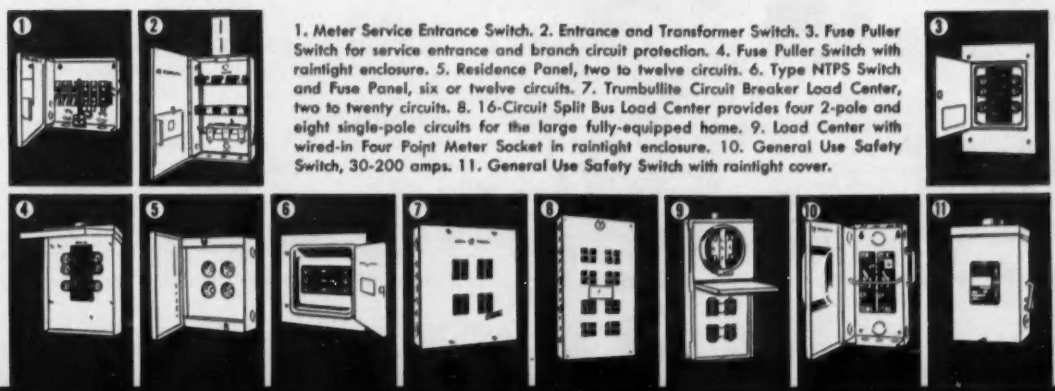
TRUMBULL SERVICE ENTRANCE EQUIPMENT PUTS GENERAL ELECTRIC ENGINEERING TO WORK FOR YOU

You uphold your own reputation for quality work when you install Trumbull Service Entrance Equipment. You assure yourself of the fast, easy installation that protects your profit margin.

Worth more? . . . Yes, but Trumbull Service Entrance Equipment is *competitively priced.*

Your nearby Trumbull Distributor can make quick delivery. For descriptive bulletin on Trumbull Service Entrance Equipment write Trumbull Components Department, General Electric Company, Plainville, Conn.

GENERAL ELECTRIC



1. Meter Service Entrance Switch. 2. Entrance and Transformer Switch. 3. Fuse Puller Switch for service entrance and branch circuit protection. 4. Fuse Puller Switch with raintight enclosure. 5. Residence Panel, two to twelve circuits. 6. Type NTPS Switch and Fuse Panel, six or twelve circuits. 7. Trumbullite Circuit Breaker Load Center, two to twenty circuits. 8. 16-Circuit Split Bus Load Center provides four 2-pole and eight single-pole circuits for the large fully-equipped home. 9. Load Center with wired-in Four Point Meter Socket in raintight enclosure. 10. General Use Safety Switch, 30-200 amps. 11. General Use Safety Switch with raintight cover.

A new concrete curing process, being tested by the New Jersey Highway Department, may speed the building of bridges and viaducts. It permits the wooden forms supporting wet concrete to be removed in 60 hours instead of the usual 14 days. After the concrete is poured into the forms, 3-foot square mats are laid on top and vacuum hoses are used to draw off excess water. This cures the concrete in a fraction of the time formerly required.

A sinking plant, and what to do about it, was one unusual assignment given Kaiser Engineers. A large area of land on which the tidewater plant was located had sunk six feet in twelve years; the dock loading area had become unusable at high tide. To solve the problem, Kaiser Engineers re-designed the dock area to increase its height and make it serve as a coffer dam to keep the water from affecting the round-the-clock operations of the mill. Tight construction scheduling was a must because of ship traffic and high tides.

Nuclear Engineering is the title of a new book, due this month, by Richard Stephenson, Consulting Chemical Engineer. This is the first book to bring together the many unique engineering problems encountered in the nuclear energy field.

Whatever your immediate research, design or engineering problems, however unusual they may be, an early consultation with Kaiser Engineers is an important step toward their quick, profitable solution. Call or write Kaiser Engineers Division of Henry J. Kaiser Company, Kaiser Building, Oakland 12, California.

THIS MONTH'S NEWS

Columbia River Compact Draft Ready in March

First draft of a proposed interstate compact governing the Columbia River and its tributaries will be completed in March for discussion by the members of the compact commission.

The March deadline was set by the executive committee of the Columbia Interstate Compact Commission, meeting in Spokane with Frederick L. Zimmermann of New York, who will write the compact with Michell Wendell, his associate. Zimmermann and Wendell have framed compacts for the Delaware, Ohio and Missouri Rivers among others.

The compact commission hopes a final proposal will be ready for consideration by the seven state legislatures concerned by the 1955 sessions. The seven states are Washington, Idaho, Oregon, Montana, Wyoming, Utah and Nevada.

This calls for a tight schedule of meetings and hearings to permit interested groups in the seven states a chance to consider the compact proposal before the end of 1954.

Compact commission representatives—42 of them from the states and federal agencies—have decided that the compact commission will be recommendatory in function, rather than asking the various legislatures and Congress for regulatory or supervisory powers.

Commission members visualize a permanent agency with headquarters probably in Spokane to perform engineering tasks short of the actual drilling at possible sites. It would occupy a unique position as the only agency blanketing all phases of river resource development: power, pollution, irrigation, fisheries, engineering and legal.

One of the compact commission's thorniest problems has been the demand for equitable power distribution among the states, a question not wholly settled. Montana and Idaho particularly have felt that power sites exploited in their states did not return a sufficient share of power for industrial expansion inside the state borders.

The question of voting power among compact members has been left up in the air and probably "will be the last thing settled," according to commission spokesmen. A committee on executive functions recommended Washington, Idaho, Oregon and Montana each get three votes, Wyoming two, Nevada and Utah and the federal government one apiece.

The problem of financing the commission's permanent activities also is undecided. The present commission functions with an annual budget of $20,000 for personnel, office and travel, contributed by the seven states. But a permanent commission would need a secretary, engineer and perhaps an attorney as staff members.

The compact commission was organized tentatively in 1950 and approved by Congress on July 16, 1952. It grew from suggestions that the states cooperate on resource development dating to 1911, when the late Gov. Oswald West of Oregon proposed a river compact. In 1942 the governors of Northwest states again proposed formal agreement among the states on a compact.

Aluminum Company States Position on Power Supply

Aluminum Co. of America is "ready and willing to consider investing its own money" for power generating plants in the Pacific Northwest to firm up its presently interruptible power supply, according to C. S. Thayer, manager of Northwest operations for Alcoa.

Thayer issued a statement explaining his company's position in the face of attacks against the aluminum industry's use of large blocks of energy.

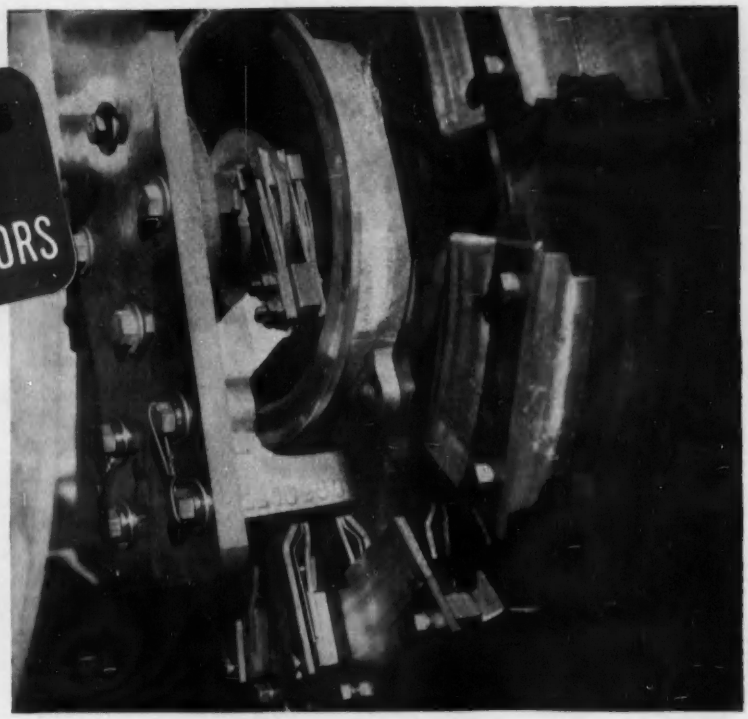
He indicated the company would be willing to work with either private companies or public agencies of the region, as the situation warranted, but that talks so far have been with private companies.

Alcoa's Vancouver, Wash., plant buys direct from Bonneville Power Administration; its Wenatchee, Wash., plant is supplied by Chelan PUD. Alcoa has been "quite concerned" over its inability to get long-term arrangements for firm power for both its Vancouver and Wenatchee plants, Thayer said.

• **Traffic signal lights** in Denver's residential areas are being changed from horizontal to vertical as an aid to color-blind motorists. Motorists with a tendency toward color blindness learn that the red lights appear on top of vertical lights, it was explained.

ALLIS-CHALMERS

5/8% STEP VOLTAGE REGULATORS



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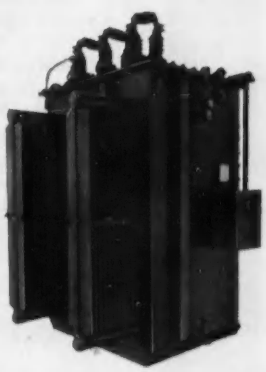

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SITES ARE GIVEN HIGH FLOOD CONTROL VALUE

The Corps of Engineers has given a high flood control value to two sites on the Clearwater River of northern Idaho where five private utilities of the Pacific Northwest have asked FPC for preliminary permits tied to hydroelectric projects. Col. F. S. Tandy, Walla Walla, Wash., district engineer, reports that survey of the Clearwater system indicates two dams could have cut two feet off the disastrous Columbia River flood crest of 1948 and substantial other damage would have been eliminated in the lower Columbia Valley.

Sites at Bruce Eddy on the Clearwater north fork and Penny Cliffs on the middle fork were specifically mentioned as highly feasible for development of upstream storage in the Snake River basin between Lewiston, Idaho, and Pittsburgh Landing, on the middle Snake, and its principal tributaries, the Clearwater and Salmon. The report was prepared at the request of Congress and has been relayed to the capital.

Col. Tandy said the survey indicated dams at the two sites could add 532,000 kw of firm energy to the Northwest supply.

For the first time, observers noted, the Corps of Engineers has adopted the term multi-use of water rather than the term multiple-purpose projects in describing utilization or storage and release of water for re-use at downstream facilities. The report concludes that the Clearwater contributes more flood water than any other regional stream and is a regional problem.

Owens River Plant Started By Los Angeles Department

Los Angeles Department of Water & Power has started construction on a $2,776,000 reservoir and power plant on the Owens River, 2½ miles below the Owens River Gorge. A dam will be built across the river creating a lake more than two miles long.

The reservoir will regulate water in the river below power plants in the gorge, enabling them to operate at peak capacity when necessary, keeping the flow of water in the stream below even.

• **Lane County Electric** Co-operative has awarded a contract of $82,977 for construction of a combination office building and shop structure. Architects Wilmsen and Endicott had estimated cost of the new construction at $90,000.

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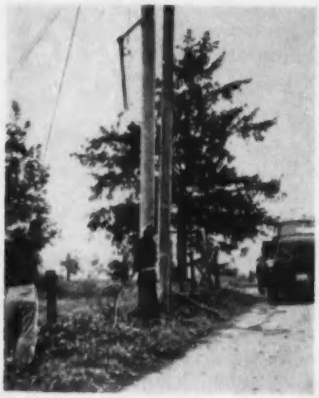

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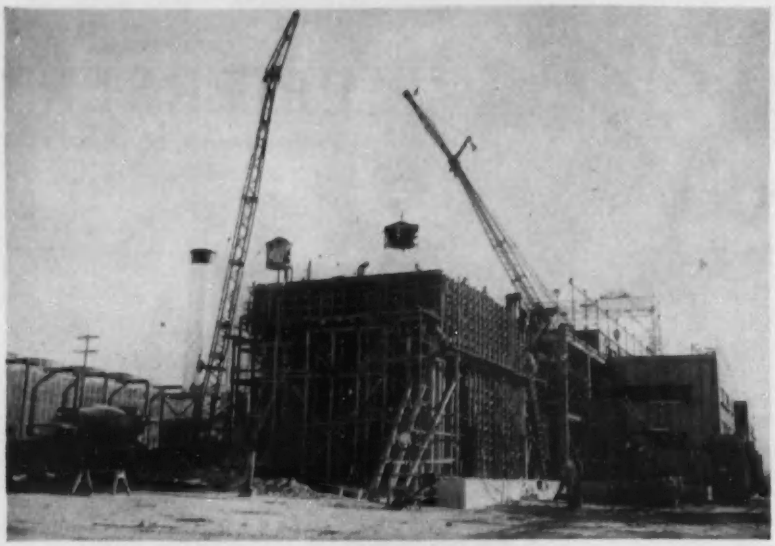

WORK HAS BEEN STARTED on a $4,700,000 addition to the Howard Person station of Public Service Co. of New Mexico. Phase three in a $16,000,000 expansion program, the plant will be finished next December; will add 33,000 kw. This Albuquerque station is the utility's main generating plant. First two units have capacity of 40,000 kw

Commission Makes Report on Eastern Oregon Potential

Eastern Oregon has ample sites for potential projects for harnessing water for irrigation, flood control and power in the view of Oregon's new Upper Columbia River Basin Commission which recently concluded hearings in seven localities.

But in the opinion of Chairman Marion T. Weatherford the people of the areas involved are not in agreement on need for some projects, which the commission considers feasible and, in some instances, desirable. He declared in a summary of the commission's sessions since its creation by the 1953 Legislature that it was the intent of the group to seek projects only if localities ask for assistance.

"Tremendous possibilities for power, irrigation and other needs" were found in prospective sites for 14 dams on the Deschutes River and four on the Metolius in central Oregon where there is extensive irrigation involving the Deschutes and Crooked River basins. Power development on the Deschutes has conflicted with fishing interests and project proposals are blocked for lack of Oregon Fish Commission sanction needed for Oregon Hydroelectric Commission approval.

Lack of funds to complete a Corps of Engineers survey of the Silvies River flood control plan in Harney County was reported. But the commission heard of need for irrigation developments on the Malheur and Owyhee River basins, some of which merit prompt action in the view of the group. In Grant County, inundation of hay growing lands might block public support of a series of dams that could control flooding of the John Day River and increase the irrigation season a full month. A dam in the Baker area could impound a "tremendous runoff," the commission noted.

Completion of another corps survey, for the Gibbon Dam site on the Umatilla River, was stressed as a help in flood control.

The commission declared there was strong agreement in the Pendleton hearing for a decision on whether the proposed John Day Dam for the main stream of the Columbia should be a high or low structure. This dam site between The Dalles Dam now under construction and McNary Dam which is nearing completion is a part of the federal Columbia development.

During the hearings, the commission established a headquarters at Pendleton and named Paul T. Rowell as executive secretary. The seven-member commission will file a report with the 1955 Legislature.

• **Northern Wasco** County (Ore.) PUD has filed an amended complaint with the Wasco County Circuit Court attacking validity of the Oregon law of 1939 providing for taxation of public utility districts. Defendants are Wasco County, the Oregon Tax Commission, city of The Dalles, Oregon Business and Tax Research and six individuals. Legal action to prevent the county from collecting property taxes began last September.

EUGENE PLAN ENDORSED BY ADMINISTRATION

Eugene, Ore., Water and Electric Board's proposal to finance power facilities of Cougar Dam on the McKenzie River within the concept of local partnership with the federal government has the personal endorsement of President Eisenhower.

The President's comment in a White House release last month followed filing of bills in both the Senate and House which would permit the municipality to put up $10,500,000 of the total $35,500,000 cost of the project authorized as a flood control project in the Willamette Basin but without power facilities. EWEB would gain an estimated 35,000 kw of hydroelectric capacity by utilization of a reregulating structure and downstream units.

President Eisenhower announced the bills introduced by Sen. Guy Cordon and Rep. Harris Ellsworth were "a perfect example" of the partnership policy. He said: "I have had an opportunity to study the program which the Eugene Water and Electric Board and the Corps of Engineers have jointly developed. Under the plan, the federal government will undertake the construction of flood control works on the McKenzie and the city will underwrite the cost of construction of power facilities and transmission lines."

The bills offered by Cordon and Ellsworth went to committee with proposals for an extra 45-ft height on the main dam for "power storage" and a rock-filled structure instead of the corps' plan for a gravel-fill dam. The dam, at a site 45 miles southeast of Eugene, would be one of the largest earth-type structures.

Current budget proposals do not list the project, but it was explained by EWEB's officials, Ray Boals and Byron Price, that during their conferences in Washington it was reported the funds for planning might be made available from a special $10,000,000 fund intended for encouragement of local-federal participation in power programs. Presumably, congressional approval would mean construction might get underway in the next fiscal year.

• **Public Service** Co. of New Mexico increased its quarterly dividend by 3c a share of common stock to 17c recently and also voted its regular quarterly dividend of $1.25 per share on preferred stock. At the same time Arthur Prager of Albuquerque, utility president, announced his firm would seek $5,000,000 this year by issuing more common stock and first mortgage bonds. The additional financing is needed for construction.

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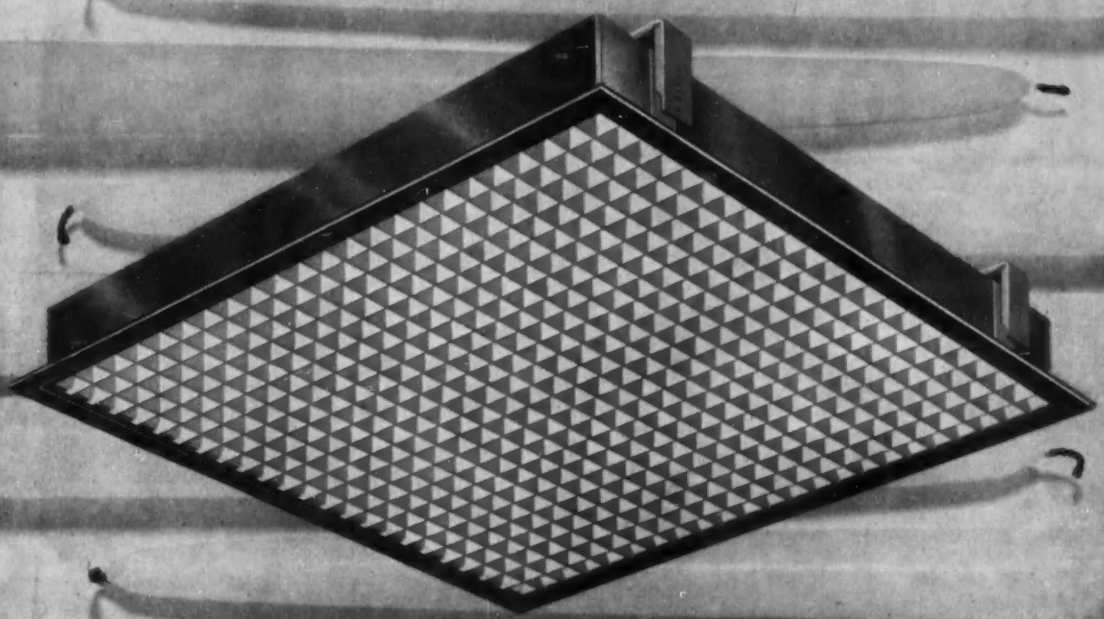

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NEW PLANS TOLD FOR SNAKE DEVELOPMENT

Two dams may be built on the Snake River downstream from the Hells Canyon site rather than the single high dam proposed at Mountain Sheep, according to Harold T. Nelson, regional director for the Bureau of Reclamation at Boise.

Nelson said drilling shows Mountain Sheep would cost perhaps $300,000,000, a good $25,000,000 more than previously estimated, because of faults in the foundation.

An alternate proposal for two lower dams is gaining favor. The Mountain Sheep project would be 160 ft high in the two-dam plan, and the Pleasant Valley Dam upstream would be 480 ft high.

The low Mountain Sheep Dam would be a regulating structure and water storage would be provided behind Pleasant Valley. Both dams would be at the same level, 1,510 ft. Nelson said a proposal to divert Salmon River water to the Mountain Sheep reservoir would still be feasible if only the low dam were built.

The high Mountain Sheep Dam, backing water to the base of a high Hells Canyon Dam, has been generally favored by the same groups supporting construction of the single federal Hells Canyon project.

Pearl Comments on Power Situation in Northwest

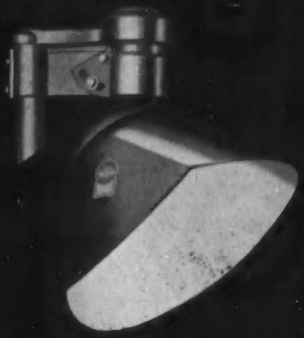
Although the present power picture is good, the Pacific Northwest faces power shortages beginning in about 1960 unless additional generating facilities are undertaken soon, the Northwest Utilities Conference Committee agreed at a recent meeting in Tacoma, Wash.

The meeting was the first attended by William Pearl, new head of the Bonneville Power Administration. "There definitely will be a power shortage in this region in the future," Pearl said. "The sooner private and public power agencies can get together as partners, working to provide needed facilities, the sooner the power problem will be solved."

C. A. Erdahl, acting director of Tacoma City Light and chairman of the committee, declared that "what is needed is a meeting of the minds on a partnership program of both private and public agencies for construction of generating facilities."

Pearl told the committee that the pending rate raise on Bonneville power will be held up for study at least until next December.

IT'S ABOLITE



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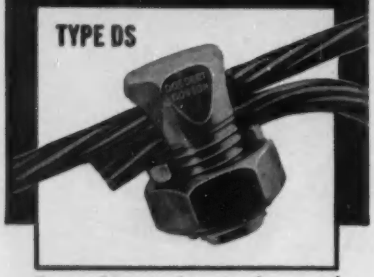

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PUD ASKS FOR PERMIT TO DEVELOP COLUMBIA

Douglas County (Wash.) PUD has applied for a preliminary permit for a hydroelectric development on the Columbia River. The application, covering the Wells site, conflicts with that of Puget Sound Power & Light Co., filed previously.

The PUD, headquartered at Bridgeport (where construction for Chief Joseph Dam is centered), proposes a plan essentially like that of the Corps of Engineers in the 308 report. The project would be in parts of three counties, Douglas, Chelan and Okanogan.

PUD spokesmen said they plan to install eight generators with a total capacity of 392,000 kw at the start, and later may add four generators to increase the project's capacity to 588,000 kw.

The Wells site is 29 miles downstream from Chief Joseph Dam. Its development would form a reservoir to the tailrace of Chief Joseph.

Chelan Tells Plans for Development on Columbia

Chelan County PUD of Wenatchee, Wash., which previously had applied to the FPC for permission to study development of the Columbia River at Rocky Reach, has announced its interest in a smaller project.

The new project, developing an estimated 145,000 kw, calls for dams on Lake Wenatchee and the Chiwawa River, with an equalizing reservoir on the Wenatchee River, into which the Chiwawa empties. A tunnel would connect the Wenatchee reservoir to a generating plant on the Chumstick River near Leavenworth.

Ivan Compton, secretary of the PUD, said his group has applied to the FPC for preliminary licenses and also has filed with the state director of hydraulics for the water rights. The filings were made at this time because "others have eyes on this resource," he said.

Tacoma Still Interested in More Hydro, Letter States

City of Tacoma still is very much interested in construction of additional hydroelectric generation, the Tacoma Public Utilities Board declared in a letter to Don Eastvold, state attorney general.

Eastvold had inquired as to the city's present position on its proposed Cowlitz hydroelectric development, asserting "some doubt has been raised as to whether the dams will be built by the city."

The board wrote that "it appears inevitable that Tacoma must provide more hydroelectric generation capacity for itself." It indicated that it would "re-examine the Cowlitz situation" but not before all delaying litigation, including a suit by state departments represented by Eastvold, has been concluded.

A NEW LOOK has been given San Diego Gas and Electric Co.'s Electric Bldg. in a major remodeling job that has been underway for more than two years. In addition to the modern exterior, the lobby and south half of the main floor have been completely remodeled and relighted. The other half of the main floor is now being remodeled and will be completed in May

• **An effective lighting system** is credited by the Seattle city engineering department with helping to keep the city's $8,000,000 Alaskan Way viaduct virtually accident-free since its opening last April. No injuries or fatalities have occurred either on the 7,660-ft double-deck viaduct or its approaches, even though peak traffic runs to 2,500 cars per hour in the major flow direction. A special speed limit of 45 mph is allowed on the structure, which bypasses the business district.

• **Southwestern Public Service Co.** has asked for authority to issue 272,500 shares of common stock to present stockholders on a basis of one for each 14 shares now held. The proposal, filed with New Mexico Public Service Commission in Santa Fe, N. M., is in connection with an expansion and improvement program for which the utility recently requested authority to issue $12,000,000 in first mortgage bonds. The company plans to raise about $23,000,000 for expansion.

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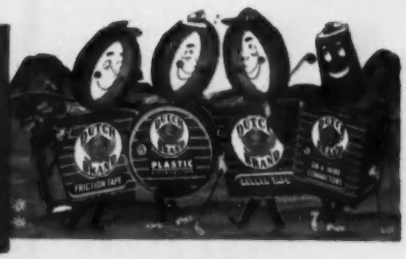

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☐ **Call your local** Civil Defense Director. He'll help you set up a plan for your offices and plant—a plan that's safer, because it's integrated with community Civil Defense action.

☐ **Check contents** and locations of first-aid kits. Be sure they're adequate and up to date. Here, again, your CD Director can help. He'll advise you on supplies needed for injuries due to blast, radiation, etc.

☐ **Encourage personnel** to attend Red Cross First-Aid Training Courses. They may save your life.

☐ **Encourage your staff** and your community to have their homes prepared. Run ads in your plant paper, in local newspapers, over TV and radio, on bulletin boards. Your CD Director can show you ads and official CD films or literature that you can sponsor locally. Set the standard of preparedness in your plant city. There's no better way of building prestige and good community relations—and no greater way of helping America.

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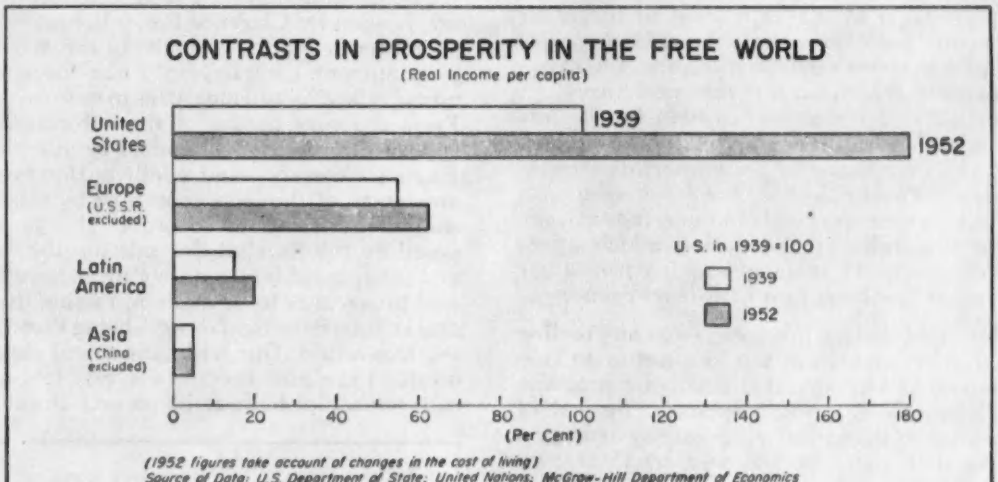
A Mounting Contrast

Even greater is the contrast between the real incomes of Asians and Americans. Today most Asians are no better off economically than they were back in 1939. On the other hand, the real income of the average American has almost doubled. As a result, the real income of the average Asian—always small by our standards—is now only a tiny fraction of that of Americans.



The chart shows that, at the outbreak of World War II, the real income (that is, actual purchasing power of income) of the average American was substantially higher than the average European's and much higher than the average Latin American's or Asian's. Since then, the European and Latin American have become better off. But the improvement in the economic lot of the average American has been so great that the others have been left far, far behind.

It must be remembered that the figures used to construct the chart are of varying quality. The fact is that few of the poorer countries have reliable statistics. However, it is generally agreed among competent observers, that the figures here presented offer a correct impression of the wide disparity in the average of real incomes between various parts of the free world. The figures, of course, have nothing decisive to say about spiritual and cultural values. In these, coun-

tries with relatively little material prosperity may be rich.

It is possible to draw a variety of morals from the story of lagging growth of income in other parts of the world. For one thing, it reflects the dynamic force of private enterprise. Private enterprise is characteristic of our economy far more than it is of most of the other free economies. The chart also reflects the fact that we are bountifully blessed with the natural resources essential to a high level of real income. Moreover, we did not suffer from the devastation and waste of two world wars as did many of the other free nations.

Narrowing the Gap

But perhaps the most important message which the chart conveys is one of warning. It warns that something must be done to narrow the gap in prosperity between America and other parts of the free world, if that world is to be united successfully in the struggle against totalitarian Communism. Writing in the HARVARD BUSINESS REVIEW, Kenneth E. Boulding recently put it this way:

> *"The crux of the problem is how to raise the three-quarters of the world that live on a low level to the high level of the other quarter, for it is precisely this wide disparity that makes our world so unstable. American-Russian relations, for instance [are] . . . complicated almost unbearably by the fact that each power is competing for the support of the vast fringe of underdeveloped countries . . . These countries are dissatisfied with their present state and are hovering between the two cultures, wondering which offers them the best chance of shifting from their present low-level to a high-level economy."*

Very real danger threatens from any feeling which may develop in the less fortunate free nations that our enviable economic progress has been made at their expense. Instead of viewing the American economic system as a model that might be followed by their own countries, they may be led to see in it a menace to their well-being. If Communist propaganda can persuade these people that their alliance with the free world will only result in their dropping farther and farther behind an increasingly prosperous United States, they will be driven to the side of totalitarianism.

Test of Effective Leadership

How can these free nations on the lower half of the income ladder be helped to alleviate the conditions that keep them there? Surely this question poses a whole series of complicated problems. Yet, if we do not exercise some effective leadership toward their solution, we can be sure that Russia will take advantage of the situation. In these circumstances, it is essential to both the stability and security of the free world that we help our less prosperous neighbors make satisfactory headway.

This does *not* mean that the United States should sacrifice its own economic progress in favor of some sort of global leveling scheme. On the contrary, a continually expanding and stronger economy is essential if we are to provide any real aid to our friends. Also, it goes without saying that our friends must be disposed to do all they can to improve their own economic position, if our cooperation to that end is to be effective.

Great Skill Required

Our part in a program to achieve this goal calls for a high degree of skill and statecraft. It involves international trade policy, which, in itself, presents a perplexing range of problems. It involves also programs of foreign technical and economic assistance. And expanded foreign investment must play a key role in a balanced program to strengthen the economies of the free world for our common good.

The Commission on Foreign Economic Policy, headed by Clarence Randall, has recently submitted a report, embodying the results of a monumental inquiry into our foreign economic relations and measures to improve them. From the very nature of the subject, discussion of the report is bound to be attended by much controversy and conflict. However, an awareness of the facts presented by this chart should inspire us to accord to the problems posed by the Randall Commission the careful and sober consideration they must have if any real progress is to be made in raising the general standards of human well-being throughout the free world. Our willingness and ability to do this have now become the real test of our statesmanship, both at home and abroad.

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nationwide developments that are of particular concern to the business and professional community served by our industrial and technical publications.

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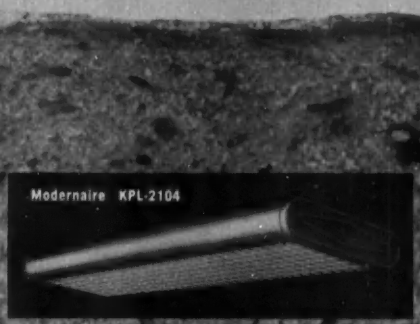
LOOK WHAT GLOBE HAS DONE WITH



In basic design, Globe's Modernaire is as standard as bread-and-butter. However, Globe has added engineering and construction refinements to achieve a remarkable performance for this type of unit.
Look at these significant excerpts from the December 23, 1953 engineering report on Globe's KPL-2104, prepared by Industrial Testing Engineers, Berkeley, California:

MAXIMUM BRIGHTNESS	**1.8 candles per sq. in. (4-lamp design)**
SHIELDING	**38° x 38°**
EFFICIENCY	**72%**

Write for complete details on the economical and highly efficient Modernaire. Also ask for Globe's 1954 catalog. It contains details on our new and improved luminaires.

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easy to terminate

These Okolite-Okoprene 15-KV shielded cables are installed at the Great Northern Paper Company's East Millinocket Plant, Millinocket, Maine. They typify the ease with which this kind of cable is terminated. No potheads were required. The termination required far fewer manhours of labor, as contrasted with the involved and expensive operation of terminating other types of cables which require a lead sheath. This is one reason why the switch today is to Okolite-Okoprene rubber-insulated high voltage cables.

WHY THEY'RE SWITCHING TO OKOLITE

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ADVANTAGES

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APPLICATIONS

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2. Generator and transformer leads.
3. Vertical risers and shaft cables.
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5. Portable substation cables and test leads.
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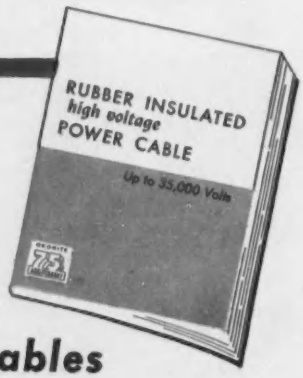
Send for this 128-page manual on rubber-insulated high voltage cable. It provides current carrying capacity tables, dimensional data, engineering information and installation procedures, complete instructions and detailed drawings for splices and terminations. Write for Bulletin WE-1075 on your letterhead to The Okonite Company, Passaic, New Jersey.



OKONITE OKONITE SINCE 1878 ***insulated cables***

1861

PACIFIC GAS AND ELECTRIC Co.'s new Murphys power house replaces an historic plant built in 1899 and oldest of the company's 57 hydro plants. The 3,800-kw plant cost $1,335,000; will operate automatically or under supervisory control from Stanislaus plant. An impulse waterwheel on a vertical shaft is driven by six jets. The outdoor generator is mounted above the turbine, unusual arrangement with impulse waterwheels

Power Company Asks License For McCloud-Pit Project

Pacific Gas and Electric Co. has filed an application with the Federal Power Commission for a license to construct a McCloud-Pit River hydroelectric development in Siskiyou and Shasta Counties.

Electric generating capacity of 232,000 kw would be developed in two stages of construction at an estimated ultimate cost of $89,000,000. In the first stage the water would flow from the McCloud River Reservoir into Iron Canyon Reservoir and thence to the McCloud-Pit power house. In the second stage the McCloud would flow into Squaw Valley Reservoir and the combined waters would flow thence to the McCloud power house before serving the McCloud-Pit plant.

The development also would make possible the beneficial use of the water through the Pit 6 and Pit 7 plants, for which PG and E has license applications pending. Pit 4 power house is now under construction.

• **Puget Sound Power & Light Co.** will get back a small portion of its distribution system which it sold to Seattle City Light. City Light bought everything in the "Seattle competitive area," which extended to what then was the city limits of Renton. Renton since has extended its corporate limits, by annexation, to include a part of this competitive area. Since Puget Power has a franchise to serve everything within the Renton city limits, City Light is preparing to sell it the facilities in the newly annexed area for $11,092.

Westerner Rates in First Ten In Power Generation Pool

Henry B. Sargent, president of Arizona Public Service Co., was the only Westerner to rate in the first ten in the 1953 kwh power generation pool conducted annually by Robert M. Hatfield Jr., Western vice-president of Combustion Engineering Inc. Sargent's fourth place guess was 440,905 million kwh against an actual figure of 442,014 kwh.

First place winner was E. C. Gaston, vice-president, Southern Services Inc., Birmingham, Ala., whose guess was within 0.08% of the correct figure.

• **Low bid** of $472,920 has been received by the Metlakatla Indian Community for the first phase of its Purple Lake hydroelectric project on Annette Island near Ketchikan, Alaska. J. A. Troxell of Bellevue, Wash., was low among five bidders, with figures ranging up to $1,475,000. Proposals have been referred to the REA, which is financing the work through a loan to the Indian community.

BPA CURTAILMENT IS ANNOUNCED

Resignation of one Bonneville Power Administration executive and elimination of nine marketing and customer services positions were announced last month following visits of Interior aides.

Harry M. Kenin, executive secretary to the administrator since 1942, resigned; said he planned to practice law in Portland and to devote time to several projects, including development of low-cost power programs.

Effective April 4 nine technical positions will be curtailed. The posts include two in rates and statistics; two on BPA 20-year contracts signed last September; three in the power marketing division (one part-time and two full-time on phosphate development projects); two in the power resources division.

Auditor Questions Allocation For Feather River Study

Trouble looms for the California Division of Water Resources in its efforts for an appropriation of $677,056 to complete a report on the feasibility of state construction of the $1,200,000 Feather River project.

The California legislature's auditor, A. Alan Post, protested the amount in a report to the lawmakers shortly after Gov. Goodwin J. Knight submitted his budget to the legislature asking that the sum be appropriated. Post recommends a $300,000 reduction in the budget request.

"If the legislature approves the amount requested," he noted, "it will constitute a total of $2,227,056 appropriated for this study during a three-year period. It is not our purpose to underestimate the importance to California of developing new sources of water and power. At the same time we do not believe this budget makes an adequate presentation of the need for the amount requested."

Originally the report on the Feather River project, which envisions a 3,500,000 acre-ft dam on the Feather River near Oroville in northern California and a system of canals to transport water into southern California, was to have been completed this year. Two years ago $800,000 was appropriated to the Division of Water Resources for the study and last year the division was given another $750,000.

• **Plans** for a new office building for B. C. Electric at Pandora Ave. and Blanshard St., Victoria, B. C., are being completed. The building will cost about $600,000 and will be six stories, of reinforced concrete construction.

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CONTRACT FOR CVP SIGNED BY SACRAMENTO, INTERIOR

The Interior Department and the Sacramento Municipal Utility District have entered into agreement whereby SMUD will begin buying Central Valley Project power July 1 when the utility district's contract with the Pacific Gas and Electric Co. expires.

The contract is for 40 years at 4.4 mills per kwh rate prevailing for 10 years unless a new project greater than 60,000 kw is brought into production within that period. The agreement then would be subject to review. After 10 years rate talks will be possible every five years.

The Pacific Gas and Electric Co. would wheel the CVP power over its lines to SMUD, receiving a fee for use of its facilities. However, SMUD plans, possibly by 1957, to have its own facilities constructed to buy the energy direct from the CVP.

The contract originally was negotiated by SMUD and Bureau of Reclamation officials before the change in national administrations. However, a controversy was stirred up in Congress and in California, the principal question raised being whether the price set would endanger the CVP repayment schedule.

Among the objectors were California legislators who contended the 4.4 mills per kwh rate would be insufficient to pay back the government's investment in CVP power facilities with interest and still allow a large enough contribution to irrigation features to continue a $3.50 an acre-ft rate for water to the farmers.

California State Engineer A. D. Edmonston had figured a rate of seven mills per kwh should be charged for CVP power. Basing the rate at that figure, he had issued a report that state ownership of the vast multiple purpose reclamation project would be feasible.

Before agreeing to the contract approved by his predecessors, Interior Secretary McKay insisted on some changes being made.

A major revision was the reduction of the government's commitment to 180,000 kw. The original contract provided for a 290,000-kw commitment. Actually SMUD's requirements total 180,000 kw at the present time and James E. McCaffrey, chief engineer and general manager of SMUD, told his directors the government agreed to provide for load growth up to a maximum of 290,000 kw.

A provision inserted in the contract relinquishes SMUD's first claim on power which would be developed on the Trinity River or any other government project in California.

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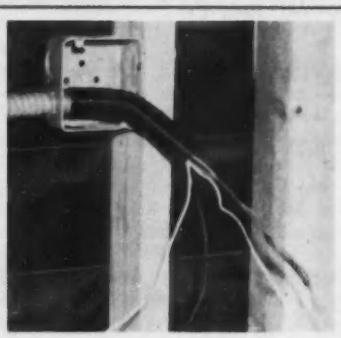

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COMMISSION MAKES RATE INCREASE PERMANENT

A temporary rate increase granted Washington Water Power Co. in January 1953 was made permanent last month by the Washington State Public Service Commission.

After hearings in Spokane, at which only token protests of the continued rate were presented, the PSC granted WWP the permanent rate amounting to 5.92% return on its investment.

The commission found the fair value of WWP property during the 12-month period ending Sept. 30, 1953, was $70,186,373. Gross revenue during a test period beginning Jan. 23 and ending Sept. 30 last year was $13,844,377 and total expenses $9,692,674.

The PSC ruled that the net operating income of $4,151,703 was a 5.92% rate of return on its investment. Although the rate was slightly higher than the 5.85% previously established by the PSC as reasonable and sufficient, the commission let the rate stand. During hearings, WWP argued that going back to the rate before Jan. 23, 1953, would reduce the return below 5.85%.

The increase had been granted temporarily to permit WWP to arrange a permanent financing program amounting to $25,000,000 to pay bank loans for building Cabinet Gorge Dam. WWP filed the application for the rate increase in September 1950. It was the only general rate hike ever sought in Washington State by the company.

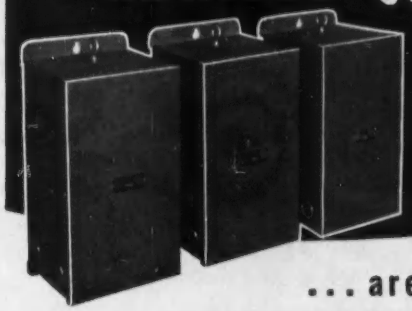
The company anticipated approximately $748,000 in increased revenue from the higher rate. The actual income exceeded this figure slightly.

A similar rate increase in Idaho was granted in February 1953 by the Idaho State Public Utilities Commission, restoring approximately 50% of a rate reduction made in 1941. Increased WWP revenue in Idaho was $233,249 of which 52% went for taxes. Although this increase was called "interim" by the PUC, no review has been scheduled.

• **Private electrical utilities** in Oregon assessed by the state tax commission are paying some $5,900,000 in property tax levies in the 1953-54 tax year. They are assessed for nearly 5% of the total assessed value of the state. Portland General Electric is the second largest property taxpayer among the utilities, at nearly $2,400,000, following Pacific Telephone & Telegraph. These figures do not include income or excise taxes, corporation fees or other taxes and fees payable to the State of Oregon or the federal government.

WHERE SAFETY AND DEPENDABILITY COUNTS...

MARCUS dry type TRANSFORMERS



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NEWS ABOUT PEOPLE

• **E. K. Albert,** executive vice-president and director of California-Pacific Utilities Co., has been elected president succeeding the late James A. Ward. **T .W. Dahlquist,** attorney, will fill the former president's unexpired term as director. Albert has been with the company for more than 15 years, first as chief engineer, later as vice-president and executive vice-president. He has been a member of the board of directors for 11 years. He was chief executive in charge of expanding and maintaining plant facilities during the period of the company's greatest growth. Recently his responsibilities have been those of senior executive.

• **Gordon W. Beachy** has been made commercial manager for Pacific Gas and Electric Co.'s Sacramento division. Since 1943 he has been supervisor of domestic sales in San Francisco. In Sacramento he succeeds **W. L. Greer** who was promoted to San Francisco division sales manager.

• **Two new executive positions** were created in reorganization of the Salt River Power District at Phoenix, Ariz. **Daniel Boone,** project treasurer for many years, was named assistant general manager in charge of financing, business development and sales. **G. W. Brandow** was named to the new post of assistant general manager in charge of engineering, supply, construction and operations. In the reorganization **S. G. Brazzill,** who had been comptroller, became treasurer of both the power district and the Salt River Valley Water Users Assn.

• **K. T. Perkins,** reactor superintendent of area 100-F at the Hanford Atomic Products Operation in Richland, Wash., was transferred to the Knolls Atomic Power Laboratory in New York, effective March 2. A 1940 chemistry graduate of the University of California, he joined the duPont Co. in 1942, went with that company to the Hanford Works in 1944 and stayed when General Electric took over the operation.

• **Paul Sullivan,** public relations director for U. S. Steel at Salt Lake City, has been made Chicago district public relations director for the company. **Alvin L. Krieg** will succeed him as public relations director of the Utah-Intermountain district.

Albert

• **Benjamin F. Fairless,** chairman of the board of U. S. Steel Corp., and **David J. McDonald,** president of United Steelworkers of America, were in the West last month on a schedule of joint plant visits designed to reach a better understanding at plant levels between management and the union. They visited company operations in Los Angeles, the San Francisco Bay area and in Utah. **G. F. Hood,** president of U. S. Steel, and other officials accompanied them.

• **Alton E. Alspaugh,** a civilian engineer with the Corps of Engineers since 1939, has resigned to join the engineering staff of Pacific Power & Light Co. Alspaugh will be hydroelectric development engineer for PP&L. He has been employed by the corps on the Bonneville project, at the Walla Walla district office and North Pacific division in Portland. He is a 1939 graduate of Oregon State College.

• **Joseph H. Jordan** has been named director of public relations for the Pacific-Southwest district of United States Steel Corp., with headquarters in Los Angeles. He succeeds **Frank A. Burns,** who has been transferred to the new Fairless Works at Morrisville, Pa.

• **Donald D. Scarff** has been made manager of G-E Lamp Division's Puget Sound sales district, with headquarters at Seattle. He succeeds **L. R. Wilson,** who retired after 29 years of service.

• **Joseph D. Costello** has been appointed California representative for the Improved Seamless Wire Co., Providence, R. I. His headquarters are at 2107 7th Ave., Los Angeles.

• **Joseph R. McGilvray,** who has headed Westinghouse manufacturing and repair operations in the West since 1946, retired recently after a 30-year career with the company. Assistant to vice-president at the time of his retirement, he joined Westinghouse in New York City as a service engineer. In 1928 he moved to Boston as marine repair specialist for the company and soon became electrical superintendent for the New England district of the Manufacturing and Repair Department. In 1934 he became district manager, a post he held until December 1946, when he was appointed manager of the Pacific Coast district, Manufacturing and Repair Department, with headquarters in Emeryville, Calif. When Westinghouse acquired the Sunnyvale plant in 1947, he transferred his headquarters there.

• **Albert H. Leader** has been appointed Seattle district manager for the Anaconda Wire & Cable Co. He succeeds **Lloyd Wolfe,** who retired March 1 after 32 years with the company. A graduate of the University of Washington, Leader joined Anaconda as a sales trainee and in 1949 was assigned to Seattle as salesman. In 1950 he toured Alaska for the company to survey possibilities for electrical development.

• **Claude L. Matthews,** well known in the West, has been named a director of the A. B. Chance Co. of Centralia, Mo. A member of the electrical industry for 54 years, he was president of the W. N. Matthews Corp. of St. Louis until its purchase last April by Chance.

• **T. C. Clarke,** manager of the British Columbia and Alberta division of the Northern Electric Co. Ltd. for many years, has returned to the coast as district manager of the Pacific division. For some time past he has been vice-president of sales at the Montreal office. **C. E. Woolgar** has been transferred from B. C. district manager to a post at Montreal.

• **L. R. Douglass,** director of power of the Bureau of Reclamation's Boulder Canyon Project, will retire from federal service March 31 after 21 years as a bureau engineer and administrator. Since July 17, 1950 he has been in charge of Hoover Dam and power plant. He went to Boulder City in October 1944 as assistant regional director of the bureau's region 3, then being organized. Douglass handled a major part of the administrative and engineering responsibilities on Davis Dam and power house on the Colorado River.

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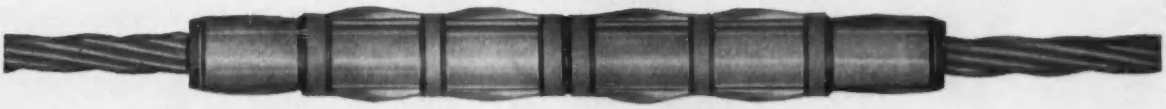

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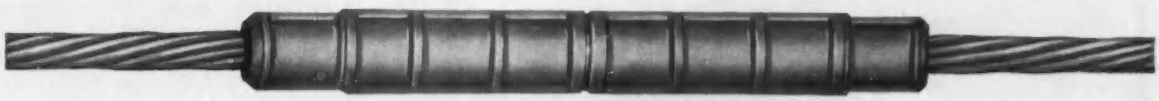

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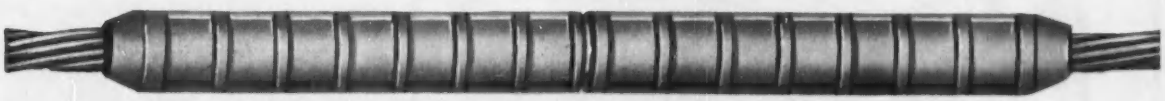

**Completed NICOPRESS Splice on ⅜" Extra High Strength
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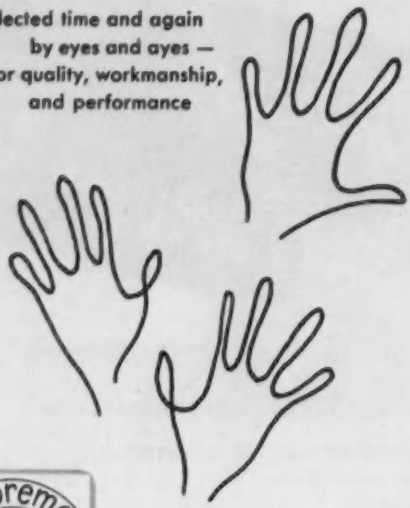

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(One-third more with double line)
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Watson

• **Jack W. Watson** has been made director of public relations and advertising by Kaiser Aluminum & Chemical Corp., with headquarters in Oakland, Calif. He has been with the organization since 1946.

• **Bonneville** Power Administration's southeast area manager, **H. R. Richmond** Jr., in charge of the Walla Walla, Wash., office since 1943, resigned effective Feb. 12 to become executive assistant to the vice-president of Great Lakes Carbon Corp. with offices in Los Angeles. He joined BPA in 1941.

• **William C. Smith** has been named residential air conditioning specialist for the Phoenix division of Arizona Public Service Co.

Deaths

• **R. E. Fisher,** 71, vice-president of public relations and sales for Pacific Gas and Electric Co. until his retirement in 1947, died Feb. 12 at his Piedmont, Calif., home. Mr. Fisher, who helped found numerous electrical associations in the West, received the 1937 McGraw Medal for "distinguished contributions to the electrical industry." A graduate of the Van der Nailen School of Engineering in San Francisco, he served with General Electric Co. and Pacific States Electric Co. in San Francisco before joining PG and E in 1911 as a power salesman. He became manager of the commercial department in 1918 and in 1922 was made vice-president of public relations and sales. Following his retirement in 1947 he served on an Economic Cooperation Administration mission charged with developing electrical power in Italy. Upon his return to San Francisco he became a power consultant to Bechtel Corp., serving in that capacity until his death.

James A. Ward

• **James A. Ward,** president of California-Pacific Utilities Co. since 1935, died Feb. 1 in San Francisco. He was 73. Educated at Purdue University and Armour Institute of Technology in Chicago, he had been employed in the public utility field since 1903. Mr. Ward came to San Francisco in 1930 as vice-president and director of Republic Electric Power Co., serving until 1933 when he was elected president and director of Republic Electric Power Corp. He continued in the same capacity with California-Pacific Utilities Co. when it was organized in 1935. Starting his career as an engineer with S. A. Oliver, Sturgis, S. D., Mr. Ward later was engineer, manager and director of Natrona County Electric Co., Casper, Wyo.; efficiency engineer with A. M. Hewes Co., Chicago; manager and engineer of Huron Light & Power Co., Huron, S. D.; and vice-president and general manager of Northwestern Public Service Co. until 1927. From 1927-30 he was vice-president and general manager of Ohio Electric Power Co., Sidney, Ohio. He served as first lieutenant of the Army Engineers during World War I.

• **Fred D. Benz,** manufacturers' representative in the San Francisco Bay area, died Feb. 18 at age 55. For many years manager of wire sales for U. S. Rubber Co.'s Pacific Division, in 1948 he went into business for himself, forming the Fred D. Benz Co., with offices in San Francisco.

• **W. Homer Kennedy,** who for 63 years had been with Harper & Reynolds Corp. in Los Angeles, died recently in his 83rd year. He was long a member of the Electric Club of Los Angeles.

• **George Drew,** retired from General Electric Supply Co., San Francisco, only recently, died in November. Well known through northern California, he also taught electrical subjects at the Drew School, private high school founded by his brother in San Francisco.

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• 96.7% of Republic Steel's 68,344 employees—over 66,000 men and women—are enrolled in the Payroll Savings Plan.

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• In addition to building personal security, these men and women of Republic are making a very important contribution to America's "efforts to have a sound dollar and a stable economy."

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The United States Government does not pay for this advertising. The Treasury Department thanks, for their patriotic donation, the Advertising Council and

ELECTRICAL WEST

NOTES ON THE TRADE

• **Line Material** Co. has opened new quarters for its sales and branch offices in Los Angeles and Portland. The Los Angeles sales and branch force has moved into a new office-warehouse building at 6490 E. Fleet St. **P. J. Walz** is branch manager; **P. K. Churchill,** division manager. In Portland L-M has opened a new building for its sales and marketing personnel at 1333 N. W. 12th Ave. **H. M. Porter** is Portland branch manager.

• **Appointment** of Crescent Electric Supply Co. as a distributor of Westinghouse incandescent and fluorescent lamps in metropolitan San Francisco was announced by Walter H. Thompson, Pacific Coast regional manager of the Westinghouse Lamp Division. Crescent Electric is located at 701 Mariposa St.

• **Albany Wholesale Supply,** Albany, Ore., has been named a distributor for Allis-Chalmers motors, controls and transformers in four Oregon counties. **R. A. Haselton** is managing owner, **W. Schantz,** general manager, and **J. Marquis,** sales manager.

• **Bunston Ltd.,** 2532 Yew St., Vancouver, B. C., has been appointed sales representative in western Canada for the Abolite Lighting Division of Jones Metal Products Co., West Lafayette, Ohio. Roy F. E. Bunston is general manager of the firm.

• **William R. Sears** has been appointed San Francisco district fixture representative for Sylvania Electric Products. For two years he had been an all-products representative. His headquarters will be at Sylvania's Emeryville, Calif., office.

• **Electrical Service** Co. of Greenville, Tex., manufacturer of distribution and power transformers, has appointed the H. J. Randolph Co. as California representative. Headquarters are at 736 Santa Anita St., San Gabriel, Calif.

• **Sales representatives** of Panama Lamp & Commercial Co. held a three-day sales conference in San Francisco headquarters recently. **Guy de Leuze,** president of the company, conducted the conference.

• **Arthur S. Davis** has been appointed regional gearing representative for Westinghouse, with headquarters at 410 Bush St., San Francisco.

J. O. Malvin, center, newly appointed Burndy representative in the Boise area, with Lawrence M. Lyons, left, Burndy Western plant manager, and Henry H. Falkner, apparatus and supply manager, Westinghouse Supply, at dinner honoring Malvin's 34-year service with Idaho Power Co. He had been purchasing agent for the past 16 years

• **James A. Peterson** has been appointed district sales engineer for the San Joaquin Valley by Thermador Electrical Mfg. Co. with headquarters in Fresno, operating under **W. H. Gribble,** northern California district manager. He was once connected with Hatch Electric Co. and Valley Electric Co., electrical contracting firms in Ventura.

• **Robert S. Shrader** has been appointed factory representative of Yarnall-Waring Co., manufacturers of steam plant equipment and paper mill digester valves. His headquarters are at 4003 Aurora Ave., Seattle.

• **Furnas Electric** Co. of Batavia, Ill., has appointed Muth-Richards Co. of Seattle as sales agents for its motor control equipment in the territory including Washington, Oregon and northern Idaho.

• **George E. Spencer** has been appointed general sales manager for Pacific Electricord Co., Los Angeles.

• **Grant Graham** has been named to the newly created post of product applications engineer for Triad Transformer Corp., Venice, Calif.

• **Arthur G. Stern** has joined Kaiser Engineers Division of Henry J. Kaiser Co. as a member of the air and stream pollution engineering group.

• **Among the 15** Westinghouse men taking a special 16-month course at Harvard Graduate School is Fred F. Herman, subdivision engineering manager, ordnance engineering, Sunnyvale, Calif. The program is part of a company-wide management development program.

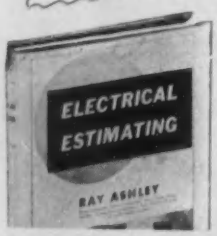
• **Burndy** Engineering Co. Inc. has announced appointment of **J. O. Malvin** as sales representative for the Boise area. He had been with Idaho Power Co. for 34 years; had been purchasing agent since 1938. He will handle the complete electrical connector line, with offices located at N. 36th St.

• **Ground-breaking** ceremonies for a multimillion dollar plant to house the defense products division of U. S. Electrical Motors Inc., Los Angeles, took place recently on an 89-acre site in Anaheim, Calif. George T. Pfleger, president, and T. G. Myers, vice-president of the firm, officiated at the ceremonies. The new plant will consist of two units totaling 126,000 sq ft and will produce aircraft motors. The new plant with other planned expansion projects will cost approximately $8,000,000. U. S. Electrical Motors operates three plants in Los Angeles and an Atlantic plant in Milford, Conn. The firm was founded in 1908.

• **Silv-A-King** Corp. of Chicago, maker of fluorescent and incandescent lighting fixtures, has appointed two new district sales managers in the West. **George Stallman** is now Seattle district sales manager, with headquarters at 568 First Ave. S. His territory includes the states of Oregon and Washington. **Gregg N. Cloos** is sales manager for Colorado, western Nebraska, Wyoming and eastern Utah. His headquarters are at 978 Garfield, Denver 6.

• **Harry S. Komer** has been made superintendent of the G-E Chemical Materials Department plant at Anaheim, Calif.

ELECTRICAL CONTRACTORS AND ESTIMATORS



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By RAY ASHLEY

Research Engineer, Electrical Contractors' Assn., City of Chicago; Member, Chicago Electrical Estimators' Assn.; Electrical Engineering and Estimating Consultant

307 pages, 6 x 9, illustrated, $8.00

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- estimating forms
- estimating tools and their proper use
- studying plans and specifications
- taking off quantities
- listing and checking material quantities
- checking completed estimates
- preparation of final bid sheets
- and many other practical subjects

REFLECTING 25 years of experience in all branches of the electrical contracting industry, this book gives information of value to the contractor, estimator, and engineer who must solve daily complex problems of estimating, appraisal, cost accounting, job scheduling, or supervision. Clear explanations, plus sample estimates and guides, show you how to handle lighting and power branch wiring—distribution equipment—auxiliary, summary, and final bid sheets—overhead and markups—checking estimates—and estimating special projects and residential wiring. Time studies and preparation of labor cost units, as well as studying plans and specifications are examined in detail.

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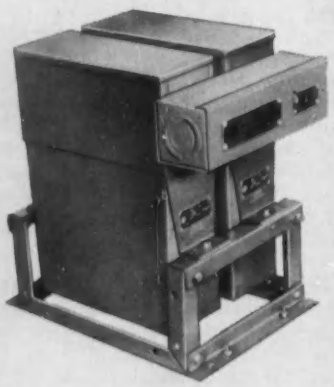

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Peterson

• **Edward L. Peterson** has been appointed Day-Brite representative for the San Diego and southeastern California territory. He has been a factory representative in southern California for the past several years. His mailing address is 709 Bank of America Bldg., San Diego 1.

• **New Westinghouse** electrical apparatus distributor in Reno and Las Vegas, Nev., and surrounding areas is Osborne & Dermody Supply Co., Reno. The Osborne & Dermody firm has a branch office in Las Vegas. **John A. Dermody** is president and **R. L. Osborne** Jr. serves as vice-president and general manager.

• **Cannon Electric** has established its third Los Angeles plant, a 6,000-sq-ft structure housing administration, engineering, final assembly and shipping functions involved in manufacturing hermetically sealed electric connectors. The new plant is two blocks from Plants I and II.

• **M. G. Sawyer Jr.** was appointed factory manager of the electronic division plant of Thermador Electrical Mfg. Co. by W. E. Cranston, president. He was formerly vice-president of Sawyer Electrical Motor Mfg. Co., which was purchased by the A. O. Smith Corp. for which he became works manager of the Pacific Coast division. The electronic division of Thermador moved recently into a new 77,000-sq-ft plant at 2000 S. Canfield Ave. in Los Angeles.

• **Wholesale Appliances** Ltd., Vancouver, B. C., has been appointed distributor in British Columbia for all Philco Corp. of Canada products. It will handle a complete parts supply and will do service work. Wholesale Appliances was formed last June and is headed by **A. S. Baillie.**

Dragge

• **Allen O. Dragge** has been named Pacific Coast district regional manager for A. O. Smith Corp., with offices at Los Angeles. He has been with the firm since 1947.

• **Three West Coast** cities are among the seven in which the newly created Trumbull Distribution Assemblies Department will manufacture such products as switchboards, panelboards, Flex-A-Power distribution systems and motor control centers. They are North Hollywood, San Francisco and Seattle. The seven plant locations were listed by W. C. Wichman, vice-president and general manager of General Electric's Industrial Power Components Division, when he announced division of the former Trumbull Electric Department into the Trumbull Components and the Distribution Assemblies departments.

• **John S. Kinnaird** has been named sales manager of the Leadlight Fixture Co., manufacturers of fluorescent lighting fixtures and a division of Oakland Engineering Co. Inc., Oakland, Calif. **Leonard Walker** will handle northern California sales for the company and **Fred** and **Don Gleason** are sales agents in Oregon, Washington, Idaho, Montana and Alaska.

• **A. R. Schneller** has been made Pacific Coast manager of welding sales for the Welding Products Division of the A. O. Smith Corp. He was transferred from Wisconsin.

• **Gano R. Baker** has been appointed Pacific Coast district manager of the Westinghouse Elevator Division.

• **Eoff Electric** Co., Portland electrical wholesaler and distributor for Motorola radio-television, has leased an additional 50x100 warehousing building across the street from its quarters at 509 N. W. 10th.

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A position is available for an experienced electrical protection and communication engineer who will be fully responsible for the development and design of system-wide protection, control and communications facilities in a utility with several automatic and remote controlled generating and substations.

Duties include direct supervision of a group making system protection and communication studies and performing related design functions, also technical supervision over the protection and communication maintenance groups.

Applicants should be from 30 to 45 years of age, must have proven ability, initiative, an electrical engineering degree, a minimum of 8 years' experience in the field of protection and communication engineering, and be completely familiar with modern equipment and its application.

This position is with a long established, progressive company, located in one of the fastest growing areas of Canada, B. C.'s climatically desirable coast.

Apply by letter, giving full qualifications, employment history and salary required to:

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PROFILES

Sherwin

Raver

E. D. Sherwin, president of San Diego Gas & Electric Co., was given the added title of chief executive officer of the company upon recent retirement of L. M. Klauber, board chairman and chief executive officer

Dr. Paul J. Raver, Bonneville administrator for 15 years, was sworn in as Seattle City Light superintendent in recent ceremonies in Northwest. He succeeds E. R. Hoffman

In recent personnel shifts made by Pacific Gas and Electric Co., W. L. (Larry) Greer was transferred from Sacramento to San Francisco as commercial manager, succeeding Harry A. Lee, now San Francisco division manager. He had been Sacramento commercial manager since 1946. William R. Bowler was made manager of the San Jose division on retirement of Thomas W. Snell from that post. Fenton Y. Kraft, former manager of Jackson district, succeeded Bowler as Colgate division manager

Kraft

Greer

Bowler

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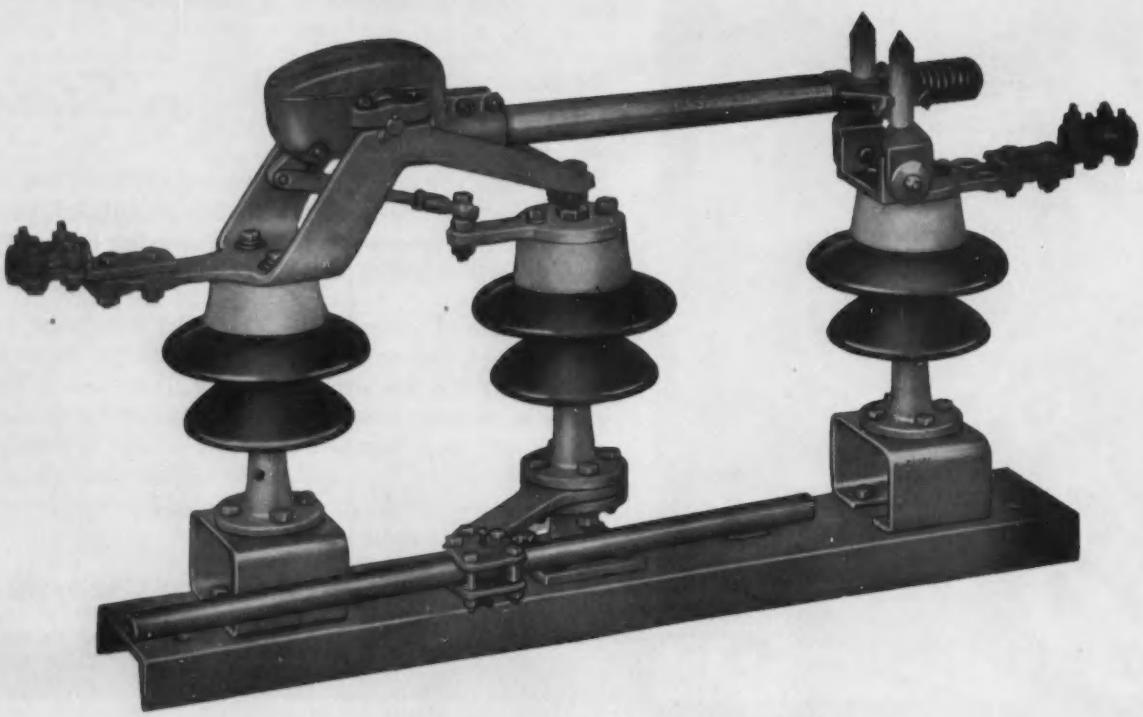

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Vertical Break, Three Pole, Single Throw, Group Operated
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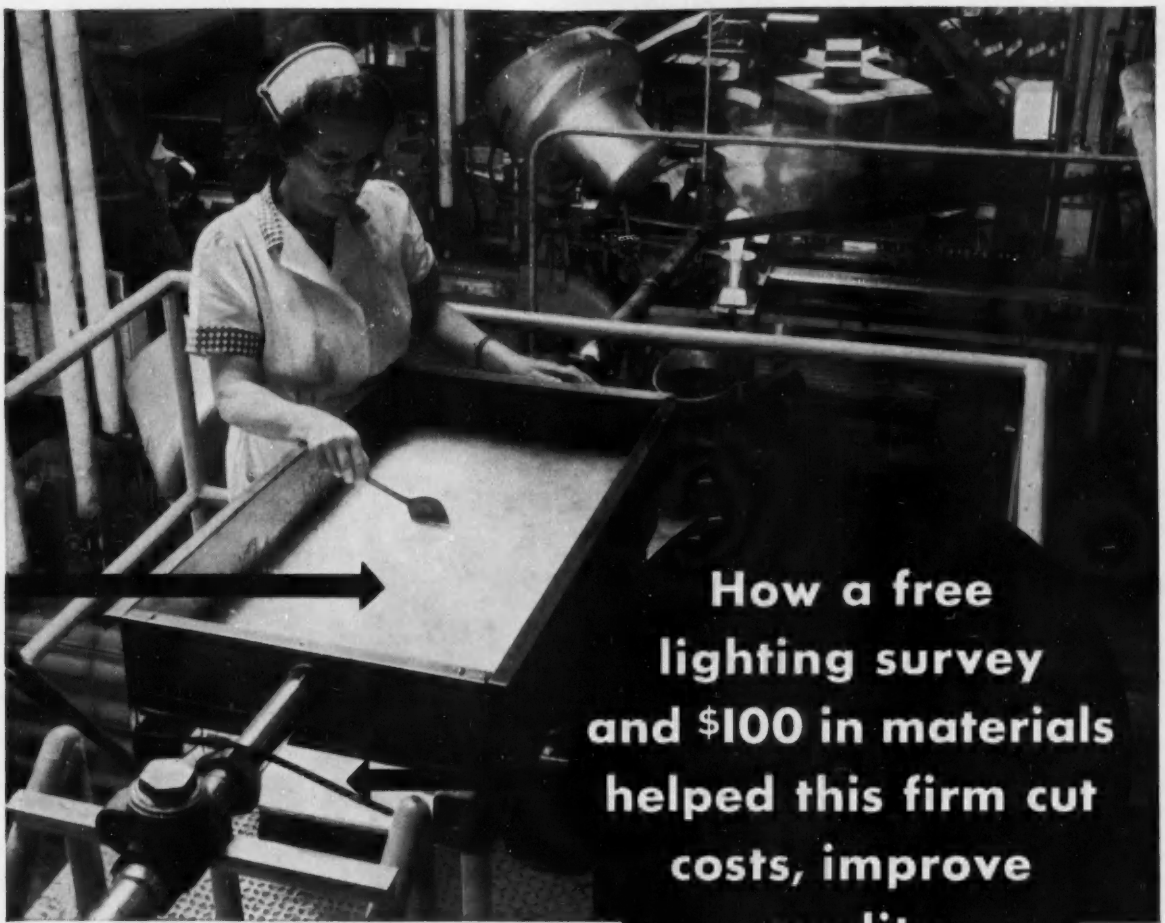

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